



Checklists of **WISCONSIN VERTEBRATES**









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Wisconsin Department of Natural Resources

Abstract

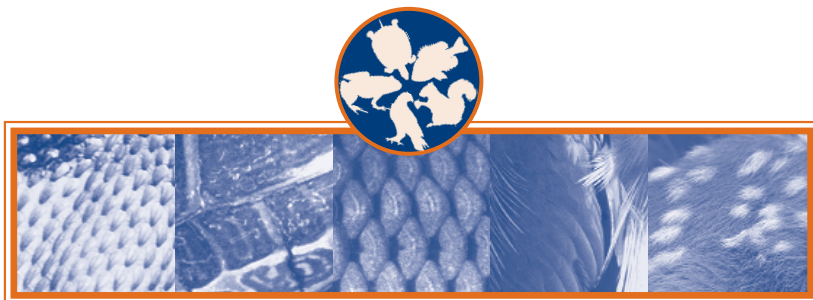
Working checklists of the vertebrate animals occurring in Wisconsin are provided. Six hundred ninety-three species are documented from the state (159 fishes, 19 amphibians, 35 reptiles, 408 birds, and 72 mammals). Six hundred sixty-eight species are believed to be native, while 25 are introduced non-native species (14 fishes, 8 birds, and 3 mammals). Five species are listed at the federal level as endangered and 1 is listed as threatened. Thirty-one species are listed as endangered species at the state level and 28 are considered threatened. At least 12 species have been extirpated from the state (6 fishes, 2 birds, and 4 mammals). Special codes indicate the relative occurrence of each species in the bird checklist. It is suggested that a process be initiated to periodically update the checklists.

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Checklists of WISCONSIN VERTEBRATES

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[T]he members of the animal kingdom, from the highest to the lowest, are marvelously connected. Every animal has something in common with all its fellows; much, with many of them; more, with a few, and usually so much with several, that it differs but little from them.

— T.H. Huxley, 1869,
*Introduction to the
Classification of Animals*


INTRODUCTION

The vertebrates (fishes, amphibians, reptiles, birds, and mammals) are some of the most well studied and best known components of Wisconsin's fauna. Each taxonomic class has been treated in a major monographic study of the state's fauna (Becker 1983, Vogt 1981, Robbins 1991, Jackson 1961). These references are now more than a decade old, however, and scientists have made numerous taxonomic name changes in the intervening years. In addition, a number of non-native (exotic) species have been introduced to the state and now occur as naturally reproducing populations. Lyons, *et al.* (2000) recently updated the checklist of Wisconsin fishes, and the Wisconsin Society for Ornithology (WSO) currently maintains a bird checklist on its web site (<http://www.uwgb.edu/birds/wso/>). Yet, there has been no comprehensive up-to-date reference available for all vertebrate species occurring in Wisconsin.

Such standardized checklists provide a ready reference for many scientific endeavors, both in the field and in the laboratory, and are particularly useful to students (Jones, *et al.* 1992; Jones, *et al.* 1997). In this report, we provide checklists of all known Recent wild — naturally occurring and introduced — vertebrates found in the state. With the exception of the birds, no distinction is made between resident and migrant species or between those that occur regularly and those of casual or accidental occurrence. Zoo and game farm populations are not listed, nor are unestablished escapees from such populations. Doubtful records, exclusions of species from the checklists, and extinct species are discussed in the text preceding each checklist. Six hundred ninety-three vertebrate species are documented as occurring in the state (159 fishes, 19 amphibians, 35 reptiles, 408 birds, and 72 mammals).

The checklists include scientific and common names of individual taxa from order to species. Complete scientific names include the name of the author who initially described the species and the year of publication. We leave author names and publication dates out of our checklists for the sake of clarity and ease of use. We encourage readers with a need for full citations to consult the most recent edition of the standard scientific references cited in the text preceding each checklist. A single common name is provided for each species to promote uniformity and more precise communication. These are generally selected from standardized lists of common names. At the family and order levels, where we take some liberties with nomenclature, more than one common name may be given. This indicates content rather than alternative names for the group. Capitalization of common names follows ornithological convention, and we carry this practice throughout the entire manuscript for the sake of consistency. We recognize that not everyone will be pleased with this decision. Authors using common names should consult the appropriate style guide or author instructions to determine the accepted practice when preparing manuscripts for submission and publication.





Information on the geographic distribution, biology, ecology, and natural history of the individual species is beyond the scope of this work. We describe, however, several on-going monitoring and atlas programs and briefly discuss the literature pertaining to Wisconsin vertebrates, as both seem relevant to a checklist endeavor. The “primary references” listed at the end of each checklist provide access to additional information on species found in the state. Hay, *et al.* (1997) provide status information for species listed as endangered or threatened by the State of Wisconsin.

The following codes are used in all five checklists to indicate the conservation status of the various species:

- FE** **federally endangered** – under federal law, any animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range (50 CFR § 17.3).
- FT** **federally threatened** – under federal law, any animal or plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range (50 CFR § 17.3).
- SE** **state endangered** – under state law, any species whose continued existence as a viable component of this state’s wild animals or wild plants is determined by the DNR to be in jeopardy on the basis of scientific evidence (§ 29.604(2)(a), *Wis. Stats.*).
- ST** **state threatened** – under state law, any species of wild animals or wild plants which appears likely, within the foreseeable future, on the basis of scientific evidence to become endangered (§ 29.604(2)(b), *Wis. Stats.*).
- INT** **introduced** – a non-indigenous/non-native species introduced, either intentionally or unintentionally, into an area (in this case Wisconsin) that is not part of its natural range.
- EXT** **extirpated** – a species that once occurred naturally within the state’s boundary but no longer does even though it may occur elsewhere.

Of the 693 species included in the checklists, 5 are listed at the federal level as endangered and 1 is listed as threatened. Thirty-one species are listed as endangered species at the state level and 28 are considered threatened. Six hundred sixty-eight species are believed to be native, while 25 are introduced non-native species (14 fishes, 8 birds, and 3 mammals). At least 12 species have been extirpated from the state, including 6 fishes (2 are now extinct), 2 birds (both are now extinct), and 4 mammals. We use additional codes to indicate the relative occurrence of species in the bird checklist. These are identified and defined in the text preceding that checklist.

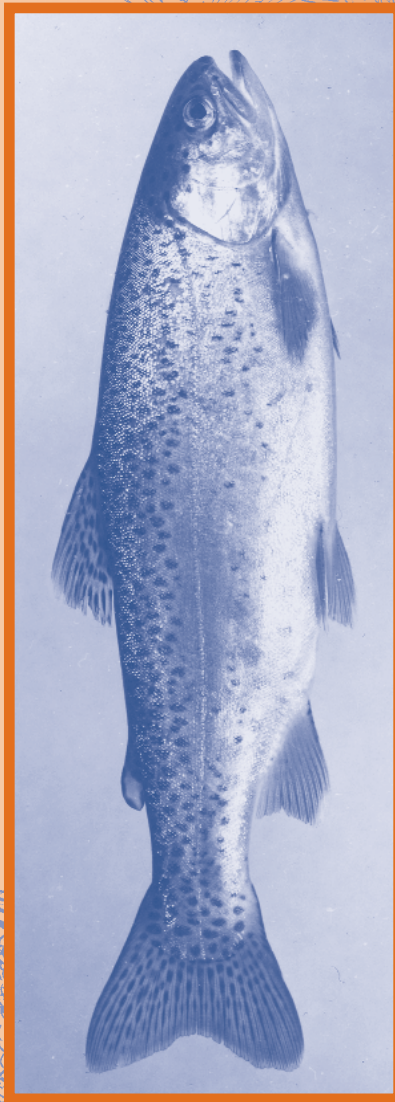
Because knowledge of the systematic relationships of animals is always changing and additional species are being added to the list of Wisconsin’s fauna, it is likely that these lists will be out-of-date in a relatively short time. Therefore, these lists should be considered working lists. It will be necessary to initiate a process to issue periodic updates.

The DNR web site includes an electronic version of this document (<http://www.dnr.state.wi.us/>).

FISHES

The world of water does not consist only of the fish we use for food. Together with these live other creatures having a place and usefulness of their own. And they are all worth knowing.

— L. Roule, 1935,
*Fishes and Their
Ways of Life*



FISHES

Lyons, *et al.* (2000) recently published an updated checklist, along with information on the occurrence, taxonomic status, distribution, and abundance of fishes in Wisconsin. We adapted that work and reproduce it here. Species-level taxonomy in the checklist follows that in the fifth edition of *Common and Scientific Names of Fishes from the United States and Canada* published by the American Fisheries Society (Robins, *et al.* 1991). This list will be updated soon and may include scientific name changes for several Wisconsin species to match names proposed by Mayden, *et al.* (1992). We show these likely changes in parentheses in the checklist. Higher level taxonomy (orders and families) follows Nelson (1994), with the exception of the Cottidae (sculpins) which are placed in the order Perciformes consistent with Mooi and Gill (1995). Species are listed alphabetically under each family. Hybrids are not included. Common names follow Robins, *et al.* (1991).

The final revision of the Wisconsin checklist contains 159 fish species in 27 families. One hundred forty-five are native to the state. Fourteen are introduced non-native species. No Wisconsin fishes are listed as endangered or threatened at the federal level. Ten fish species are listed as endangered at the state level and 11 species are considered threatened at the state level.

Excluded Fish Species

We exclude several fish species from our checklist. Lyons, *et al.* (2000) categorized 19 non-native fish species as “transient” because self-sustaining populations of these species have not been found within the state. These hypothetical species (Table 1) are excluded from our checklist, since they do not meet our criteria for inclusion.

Table 1. Transient non-native fish species excluded from the checklist.

<i>Alosa sapidissima</i>	American Shad
<i>Ctenopharyngodon idella</i>	Grass Carp
<i>Cyprinella lutrensis</i>	Red Shiner
<i>Epalzeorhynchus frenatum</i>	Rainbow Sharkminnow
<i>Scardinius erythrophthalmus</i>	Rudd
<i>Tinca tinca</i>	Tench
<i>Colossoma</i> or <i>Piaractus</i> sp.	“Pacu” or “Pirapatinga”
<i>Pygocentrus nattereri</i>	“Red” Piranha
<i>Ictalurus furcatus</i>	Blue Catfish
<i>Phractocephalus hemiliopterus</i>	Redtail Catfish
<i>Oncorhynchus clarki</i>	Cutthroat Trout
<i>Oncorhynchus gorbuscha</i>	Pink Salmon
<i>Salmo salar</i>	Atlantic Salmon
<i>Thymallus arcticus</i>	Arctic Grayling
<i>Gambusia affinis</i>	Western Mosquitofish
<i>Poecilia reticulata</i>	Guppy
<i>Morone saxatilis</i>	Striped Bass
<i>Astronotus ocellatus</i>	Oscar
<i>Tilapia</i> or <i>Oreochromis</i> sp.	“Tilapia”



In addition, Becker (1983) listed Longjaw Cisco (*Coregonus alpenae*) as occurring in the state. This species is now considered a synonym of the Shortjaw Cisco (*Coregonus zenithicus*) and is therefore excluded from the checklist.

Extinct Fish Species

In addition to the above listed species, we exclude the Deepwater Cisco (*Coregonus johanna*) and Shortnose Cisco (*C. reighardi*) from our list. Both species occurred in Lake Michigan, but are now believed to be extinct (Page and Burr 1991, Robins, *et al.* 1991, Coon 1999).

The Wisconsin Ichthyological Literature

The literature dealing with the life history, ecology, distribution, status and biology of Wisconsin fishes is extensive. Material has been published in a variety of ichthyology, ecology, zoology and fisheries management periodicals, as well as in numerous government reports. Most significant older works are included in the bibliography in Dr. George Becker's (1983) *Fishes of Wisconsin*. However, there has been no published bibliography of works dealing with Wisconsin fishes since Becker's work. Such a tool would be useful to professional fisheries managers, biologists, anglers and others interested in Wisconsin fishes. A considerable amount of biological information is also contained in unpublished agency records and files. Dr. John Lyons and colleagues have initiated work to update and rewrite *Fishes of Wisconsin* (J. Lyons, pers. comm.), and that work will likely bring the bibliography up to date.

Fish Survey and Atlas Efforts

In the mid-1970s, a research effort was initiated by the Wisconsin Department of Natural Resources (DNR) to systematically sample the distribution and relative abundances of fishes throughout the inland waters of Wisconsin. The study focused primarily on a survey of then current fish distribution, but also synthesized historical distribution records where these were available (Fago 1992). Reduced funding terminated the study in the 1980s before the entire state could be surveyed. Findings from the initial work are summarized in Fago (1992) and a number of previous basin-specific reports referenced therein. Voucher specimens from this study are maintained in the Milwaukee Public Museum's vertebrate zoology collection. No systematic statewide inventory has occurred since the Fish Distribution Survey was terminated. However, many additional fisheries studies have been carried out, including studies of entire fish communities in certain habitat types and detailed surveys of all habitats within specific regions. Lyons, *et al.* (2000) identify these more recent studies. Systematic statewide surveys for specific species (e.g., several lampreys, minnows, suckers, and darters; Paddlefish; Slender Madtom; Slimy Sculpin; and Longear Sunfish) have also been conducted (J. Lyons, pers. comm.).





Class Cephalaspidomorphi: Lampreys

Order Petromyzontiformes: Lampreys

Family Petromyzontidae: Lampreys

<i>Ichthyomyzon castaneus</i>	Chestnut Lamprey
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey
<i>Ichthyomyzon gagei</i>	Southern Brook Lamprey
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey
<i>Lampetra appendix</i>	American Brook Lamprey
INT <i>Petromyzon marinus</i>	Sea Lamprey

Class Actinopterygii: Ray-finned Fishes

Order Acipenseriformes: Sturgeons and Paddlefishes

Family Acipenseridae: Sturgeons

<i>Acipenser fulvescens</i>	Lake Sturgeon
<i>Scaphirhynchus platorhynchus</i>	Shovelnose Sturgeon

Family Polyodontidae: Paddlefishes

ST <i>Polyodon spathula</i>	Paddlefish
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Order Semionotiformes: Gars

Family Lepisosteidae: Gars

<i>Lepisosteus osseus</i>	Longnose Gar
<i>Lepisosteus platostomus</i>	Shortnose Gar

Order Amiiformes: Bowfins

Family Amiidae: Bowfins

<i>Amia calva</i>	Bowfin
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Order Osteoglossiformes: Mooneyes

Family Hiodontidae: Mooneyes

SE <i>Hiodon alosoides</i>	Goldeye
<i>Hiodon tergisus</i>	Mooneye

Order Anguilliformes: Eels

Family Anguillidae: Freshwater Eels

<i>Anguilla rostrata</i>	American Eel ¹
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Order Clupeiformes: Herrings

Family Clupeidae: Herrings

SE <i>Alosa chrysochloris</i>	Skipjack Herring
INT <i>Alosa pseudoharengus</i>	Alewife
<i>Dorosoma cepedianum</i>	Gizzard Shad

Order Cypriniformes: Minnows and Suckers

Family Cyprinidae: Minnows and Carps

<i>Campostoma anomalum</i>	Central Stoneroller
<i>Campostoma oligolepis</i>	Largescale Stoneroller
INT <i>Carassius auratus</i>	Goldfish
<i>Clinostomus elongatus</i>	Redside Dace
<i>Couesius plumbeus</i>	Lake Chub

¹ While native in the Mississippi River basin, the catadromous American Eel (*Anguilla rostrata*) is an introduced species in Wisconsin waters of the Great Lakes. Although some individuals may swim all the way from the Atlantic Ocean to Lake Superior, natural barriers precluded this in historical times. In addition, it is likely that individuals of this species arrive in the ballast water of ocean-going vessels.



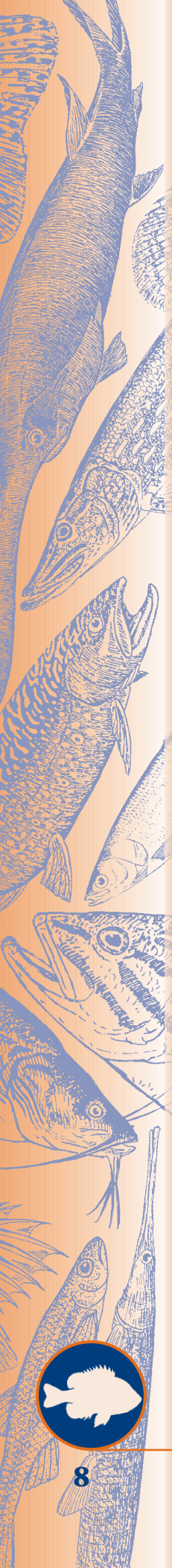
	<i>Cyprinella spiloptera</i>	Spotfin Shiner
INT	<i>Cyprinus carpio</i>	Common Carp
SE	<i>Erimystax x-punctatus</i> ²	Gravel Chub
	<i>Hybognathus hankinsoni</i>	Brassy Minnow
	<i>Hybognathus nuchalis</i>	Mississippi Silvery Minnow
SE	<i>Luxilus chrysocephalus</i>	Striped Shiner
	<i>Luxilus cornutus</i>	Common Shiner
ST	<i>Lythrurus umbratilis</i>	Redfin Shiner
ST	<i>Macrhybopsis aestivalis</i>	Speckled Chub
	<i>Macrhybopsis storeriana</i>	Silver Chub
	<i>Margariscus margarita</i>	Pearl Dace
	<i>Nocomis biguttatus</i>	Hornyhead Chub
	<i>Notemigonus crysoleucas</i>	Golden Shiner
SE	<i>Notropis (Hybopsis) amnis</i>	Pallid Shiner
ST	<i>Notropis anogenus</i>	Pugnose Shiner
	<i>Notropis atherinoides</i>	Emerald Shiner
	<i>Notropis blennius</i>	River Shiner
EXT	<i>Notropis buchanani</i>	Ghost Shiner
EXT	<i>Notropis chalybaeus</i>	Ironcolor Shiner
	<i>Notropis dorsalis</i>	Bigmouth Shiner
	<i>Notropis heterodon</i>	Blackchin Shiner
	<i>Notropis heterolepis</i>	Blacknose Shiner
	<i>Notropis hudsonius</i>	Spottail Shiner
ST	<i>Notropis nubilus</i>	Ozark Minnow
	<i>Notropis rubellus</i>	Rosyface Shiner
	<i>Notropis stramineus (Iudibundus)</i>	Sand Shiner
	<i>Notropis texanus</i>	Weed Shiner
	<i>Notropis volucellus</i>	Mimic Shiner
	<i>Notropis wickliffi</i>	Channel Shiner
	<i>Opsopoeodus emiliae</i>	Pugnose Minnow
	<i>Phenacobius mirabilis</i>	Suckermouth Minnow
	<i>Phoxinus eos</i>	Northern Redbelly Dace
	<i>Phoxinus erythrogaster</i>	Southern Redbelly Dace
	<i>Phoxinus neogaeus</i>	Finescale Dace
	<i>Pimephales notatus</i>	Bluntnose Minnow
	<i>Pimephales promelas</i>	Fathead Minnow
	<i>Pimephales vigilax</i>	Bullhead Minnow
	<i>Rhinichthys atratulus</i>	Blacknose Dace
	<i>Rhinichthys cataractae</i>	Longnose Dace
	<i>Semotilus atromaculatus</i>	Creek Chub

Family Catostomidae: Suckers

	<i>Carpionodes carpio</i>	River Carpsucker
	<i>Carpionodes cyprinus</i>	Quillback
	<i>Carpionodes velifer</i>	Highfin Carpsucker
	<i>Catostomus catostomus</i>	Longnose Sucker
	<i>Catostomus commersoni</i>	White Sucker
ST	<i>Cycleptus elongatus</i>	Blue Sucker
EXT	<i>Erimyzon oblongus</i>	Creek Chubsucker
	<i>Erimyzon sucetta</i>	Lake Chubsucker
	<i>Hypentelium nigricans</i>	Northern Hog Sucker

² Listed in NR 27.03(2), Wis. Admin. Code, as “*Erimysto*” *x-punctata*, a misspelling of *Erimystax*.





Family Catostomidae: Suckers (continued)

<i>Ictiobus bubalus</i>	Smallmouth Buffalo
<i>Ictiobus cyprinellus</i>	Bigmouth Buffalo
ST <i>Ictiobus niger</i>	Black Buffalo
<i>Minytrema melanops</i>	Spotted Sucker
<i>Moxostoma anisurum</i>	Silver Redhorse
ST <i>Moxostoma carinatum</i>	River Redhorse
SE <i>Moxostoma duquesnei</i>	Black Redhorse
<i>Moxostoma erythrurum</i>	Golden Redhorse
<i>Moxostoma macrolepidotum</i>	Shorthead Redhorse
ST <i>Moxostoma valenciennesi</i>	Greater Redhorse

Order Siluriformes: Catfishes

Family Ictaluridae: Bullhead Catfishes

<i>Ameiurus melas</i>	Black Bullhead
<i>Ameiurus natalis</i>	Yellow Bullhead
<i>Ameiurus nebulosus</i>	Brown Bullhead
<i>Ictalurus punctatus</i>	Channel Catfish
SE <i>Noturus exilis</i>	Slender Madtom
<i>Noturus flavus</i>	Stonecat
<i>Noturus gyrinus</i>	Tadpole Madtom
<i>Pylodictis olivaris</i>	Flathead Catfish

Order Esociformes: Pikes and Allies

Family Esocidae: Pikes

<i>Esox americanus</i>	Grass Pickerel
<i>Esox lucius</i>	Northern Pike
<i>Esox masquinongy</i>	Muskellunge

Muskellunge
Wisconsin State Fish



Family Umbridae: Mudminnows

<i>Umbra limi</i>	Central Mudminnow
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Order Osmeriformes: Smelts and Allies

Family Osmeridae: Smelts

INT <i>Osmerus mordax</i>	Rainbow Smelt
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Order Salmoniformes: Trouts and Allies

Family Salmonidae: Trouts

<i>Coregonus artedi</i>	Cisco ³
<i>Coregonus clupeaformis</i>	Lake Whitefish
<i>Coregonus hoyi</i>	Bloater
<i>Coregonus kiyi</i>	Kiyi ⁴
EXT <i>Coregonus nigripinnis</i>	Blackfin Cisco
<i>Coregonus zenithicus</i>	Shortjaw Cisco ⁴
INT <i>Oncorhynchus kisutch</i>	Coho Salmon
INT <i>Oncorhynchus mykiss</i>	Rainbow Trout

³ The Cisco (*Coregonus artedi*) is also frequently referred to as the Lake Herring.

⁴ Kiyi (*Coregonus kiyi*) and Shortjaw Cisco (*C. zenithicus*) are extirpated from Lake Michigan, but remain in low numbers in Lake Superior (Lyons, *et al.* 2000).



INT	<i>Oncorhynchus nerka</i>	Kokanee Salmon ⁵
INT	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon
	<i>Prosopium coulteri</i>	Pygmy Whitefish
	<i>Prosopium cylindraceum</i>	Round Whitefish
INT	<i>Salmo trutta</i>	Brown Trout
	<i>Salvelinus fontinalis</i>	Brook Trout
	<i>Salvelinus namaycush</i>	Lake Trout

Order Percopsiformes: Trout-perches and Pirate Perch

Family Percopsidae: Trout-perches

Percopsis omiscomaycus Trout-perch

Family Aphredoderidae: Pirate Perch

Aphredoderus sayanus Pirate Perch

Order Gadiformes: Codfishes

Family Gadidae: Cods

Lota lota Burbot

Order Atheriniformes: Silversides

Family Atherinidae: Silversides

Labidesthes sicculus Brook Silverside

Order Cyprinodontiformes: Topminnows and Killifishes

Family Fundulidae: Topminnows and Killifishes

Fundulus diaphanus Banded Killifish

SE *Fundulus dispar* Northern Starhead Topminnow

Fundulus notatus Blackstripe Topminnow

Order Gasterosteiformes: Sticklebacks

Family Gasterosteidae: Sticklebacks

Culaea inconstans Brook Stickleback

INT *Gasterosteus aculeatus* Threespine Stickleback

Pungitius pungitius Ninespine Stickleback

Order Perciformes: Perch-like Fishes

Family Cottidae: Sculpins

Cottus bairdi Mottled Sculpin

Cottus cognatus Slimy Sculpin

Cottus ricei Spoonhead Sculpin

Myoxocephalus thompsoni Deepwater Sculpin

Family Moronidae: Temperate Basses

INT *Morone americana* White Perch

Morone chrysops White Bass

Morone mississippiensis Yellow Bass

Family Centrarchidae: Sunfishes

Ambloplites rupestris Rock Bass

Lepomis cyanellus Green Sunfish

Lepomis gibbosus Pumpkinseed

Lepomis gulosus Warmouth

Lepomis humilis Orangespotted Sunfish

Lepomis macrochirus Bluegill

⁵ The Kokanee Salmon (*Oncorhynchus nerka*) is a freshwater form of the anadromous Sockeye Salmon.





Family Centrarchidae: Sunfishes (*continued*)

- ST** *Lepomis megalotis* Longear Sunfish
- Micropterus dolomieu* Smallmouth Bass
- Micropterus salmoides* Largemouth Bass
- Pomoxis annularis* White Crappie
- Pomoxis nigromaculatus* Black Crappie

Family Percidae: Perches

- SE** *Ammocrypta (Crystallaria) asprella*⁶ Crystal Darter
- Ammocrypta clara* Western Sand Darter
- Etheostoma asprigene* Mud Darter
- Etheostoma caeruleum* Rainbow Darter
- SE** *Etheostoma chlorosoma* Bluntnose Darter
- Etheostoma exile* Iowa Darter
- Etheostoma flabellare* Fantail Darter
- Etheostoma microperca* Least Darter
- Etheostoma nigrum* Johnny Darter
- Etheostoma zonale* Banded Darter
- INT** *Gymnocephalus cernuus* Ruffe
- Perca flavescens* Yellow Perch
- Percina caprodes* Logperch
- ST** *Percina evides* Gilt Darter
- Percina maculata* Blackside Darter
- Percina phoxocephala* Slenderhead Darter
- Percina shumardi* River Darter
- Stizostedion canadense* Sauger
- Stizostedion vitreum* Walleye

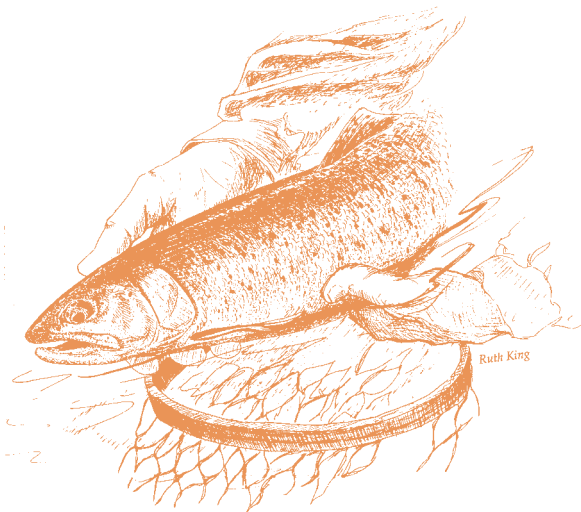
Family Sciaenidae: Drums

- Aplodinotus grunniens* Freshwater Drum

Family Gobiidae: Gobies

- INT** *Neogobius melanostomus* Round Goby

⁶ Listed in NR 27.03(2), Wis. Admin. Code, as *Crystallaria asperella*.



Primary Fish References: Lyons, *et al.* 2000, Coon 1999, Fago 1992, Page and Burr 1991, Holland-Bartels, *et al.* 1990, Becker 1983, Auer 1982, Eddy and Underhill 1974, Smith, *et al.* 1971.



AMPHIBIANS



Because most amphibians are secretive animals hidden away in their moisture-conserving crevices and lairs, commonly seen and heard only during breeding season, little is popularly known of their natural ways.

— S. Klein, 1983,
*The Encyclopedia of
North American Wildlife*





AMPHIBIANS

Taxonomy in the amphibian checklist closely follows the standard field guide to eastern and central North American species by Conant and Collins (1991) and *Salamanders of the United States and Canada* (Petranka 1998). Species are listed alphabetically under each family. In some cases, a subspecies is designated. We followed this practice only when a single subspecies is known from the state and there is no question as to its identity. Common names follow Crother, *et al.* (2000).

The final revision of the checklist contains 19 amphibian species in 7 families. All 19 species are native. No Wisconsin amphibians are listed as endangered or threatened at the federal level. Blanchard's Cricket Frog (*Acris crepitans blanchardi*) is listed as endangered at the state level. No amphibians are listed as threatened at the state level.

Excluded Amphibian Species

We exclude Tremblay's Salamander (*Ambystoma tremblayi*) from the checklist. Vogt (1981) included an account for Tremblay's Salamander in his treatment of the Wisconsin herpetofauna, but this "species" is now known to be a triploid, unisexual variety of hybrid origin (between Jefferson's Salamander [*Ambystoma jeffersonianum*] and Blue-spotted Salamander [*Ambystoma laterale*]).

The Wisconsin Herpetological Literature

The literature dealing with the ecology, life history, status, history and distribution of Wisconsin's amphibians is scattered in a plethora of journals, bulletins, and sometimes-obscure reports. Extensive bibliographies providing access to this literature have been compiled (Dluskowski, *et al.* 1987, Watermolen 1992), and a comprehensive bibliography is now available on the Milwaukee Public Museum's web site (<http://www.mpm.edu/>). Updating this bibliography is an on-going cooperative project.

Amphibian Survey and Atlas Efforts

Amphibians are the subjects of several on-going survey and atlas efforts. The *Wisconsin Herpetological Atlas Project* tracks the distributions of amphibians (and reptiles) in Wisconsin. The Milwaukee Public Museum, with the cooperative support of the DNR's Bureau of Endangered Resources, and The Nature Conservancy, initiated the Herpetological Atlas Project in 1986. The Herpetological Atlas is producing a computerized database of amphibian distribution, based on records obtained from museum collections, field surveys, literature, and field notes provided by volunteer observers throughout the state. Over 30,000 records have been received, and over 450 new county records have been confirmed since the project began. The data collected help in mapping species distributions, documenting rare species occurrences, analyzing population trends, examining habitat requirements, and planning

conservation priorities. Preliminary results of the Herpetological Atlas Project are presented in Casper (1996, 1998). For more information on the Herpetological Atlas Project, readers are encouraged to visit the project's web site (<http://www.mpm.edu/>).

The *Wisconsin Frog and Toad Survey* is an on-going survey coordinated by the DNR. The survey was initiated in 1984, and relies heavily on volunteer efforts. Background information on the survey is included in Mossman and Hine (1985), and the history, analytical techniques, distribution maps, and trend results through 1995 are thoroughly summarized in Mossman, *et al.* (1998). Survey routes are distributed statewide, with a goal of two survey routes in each county. Routes consist of 10 sites that are monitored 3 times annually (8-30 April, 20 May - 5 June, and 1-15 July). Presence/absence of each species is determined for each site based on the breeding calls of male frogs. The relative number of calling individuals at each site ranks the abundance of each species. Survey data are statistically analyzed and a calling index to the route populations is calculated. These route populations are regressed over years to create a species population trend (Dhuey and Hay 1999).

Class Amphibia: Amphibians

Order Caudata: Salamanders

Family Salamandridae: Newts

Notophthalmus viridescens louisianensis . . . Central Newt

Family Proteidae: Mudpuppies

Necturus maculosus maculosus . . . Common Mudpuppy

Family Ambystomatidae: Mole Salamanders

Ambystoma laterale Blue-spotted Salamander

Ambystoma maculatum Spotted Salamander

Ambystoma tigrinum tigrinum . . . Eastern Tiger Salamander

Family Plethodontidae: Lungless Salamanders

Hemidactylium scutatum Four-toed Salamander

Plethodon cinereus Eastern Red-backed Salamander

Order Anura: Frogs

Family Bufonidae: Toads

Bufo americanus americanus Eastern American Toad

Family Hylidae: Treefrogs

 *Acris crepitans blanchardi* Blanchard's Cricket Frog

Pseudacris crucifer crucifer Northern Spring Peeper

*Pseudacris triseriata*⁷ Chorus Frog

Hyla chrysoscelis Cope's Gray Treefrog

Hyla versicolor Gray Treefrog

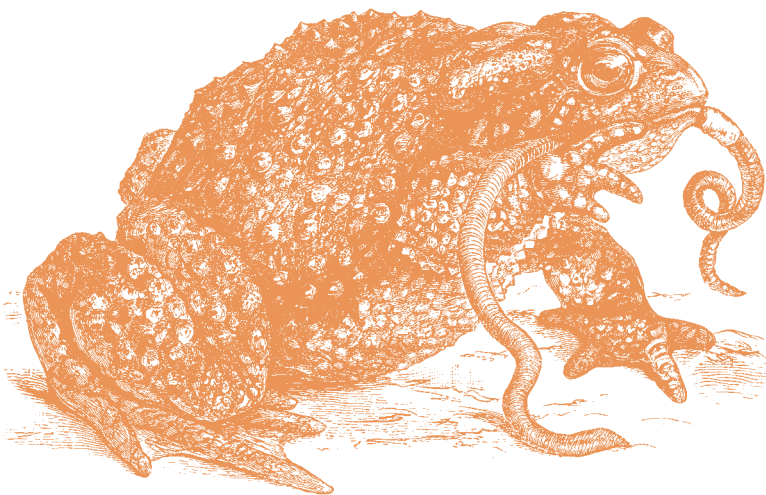
⁷ Elevation of the Western Chorus Frog (*P. t. triseriata*) and Boreal Chorus Frog (*P. t. maculata*) subspecies to full species status was proposed by Platz (1989). Both subspecies apparently occur in Wisconsin, but their ranges have not been well defined. Until additional work has been completed to clarify the identity of Wisconsin specimens, we have chosen to treat the two as subspecies of the Chorus Frog.





Family Ranidae: Ranids (“true” frogs)

<i>Rana catesbeiana</i>	.....	American Bullfrog
<i>Rana clamitans melanota</i>	.....	Northern Green Frog
<i>Rana palustris</i>	.....	Pickerel Frog
<i>Rana pipiens</i>	.....	Northern Leopard Frog
<i>Rana septentrionalis</i>	.....	Mink Frog
<i>Rana sylvatica</i>	.....	Wood Frog



Primary Amphibian References: Casper 1998, Mossman, *et al.* 1998, Casper 1996, Watermolen 1995, Conant and Collins 1991, Vogt 1981, Pentecost and Vogt 1976 (as well as references cited in Watermolen 1992 and Dlutkowski, *et al.* 1987).

REPTILES



Although reptiles are classified among the higher vertebrates, the form of many of them is so reminiscent of life on Earth hundreds of millions of years ago that they may justifiably be regarded as living relics of those times...

— Z. Vogel
Reptile Life



REPTILES

Taxonomy in the reptile checklist follows that in the field guide to eastern and central North American species by Conant and Collins (1991). Species are listed alphabetically under each family. As in the amphibian checklist, specific subspecies are occasionally listed. We followed this practice when only one subspecies is known from the state and there is no question as to its identity. Common names follow Crother, *et al.* (2000).

The final revision of the Wisconsin checklist contains 35 reptile species in 9 families. All 35 species are native. None are currently listed as endangered or threatened at the federal level. One turtle, 1 lizard, and 4 snakes are listed as endangered at the state level, and 2 turtles and 1 snake are considered threatened at the state level.

Excluded Reptile Species

We exclude Plains Hognose Snake (*Heterodon nasicus nasicus*) and Smooth Earth Snake (*Virginia valeriae*) from the Wisconsin checklist. These species are known from Wisconsin from only one or two specimens (Vogt 1981, Casper 1996). Most herpetologists believe it is doubtful that these species occur in breeding populations anywhere in the state, and their occurrence can be considered accidental.

The Wisconsin Herpetological Literature

The literature on Wisconsin's reptiles is extensive and rich; records have been published in a variety of journals, bulletins, and other outlets. Dlutkowski, *et al.* (1987) provided a bibliography of 360 papers, notes and articles dealing with the ecology, life history, distribution, history, and status of Wisconsin amphibians and reptiles. More than 140 additional works are included in an update to that bibliography (Watermolen 1992). An on-line version of the bibliography is now available on the Milwaukee Public Museum's web site (<http://www.mpm.edu/>). Update of the bibliography is an on-going cooperative project.

Reptile Survey and Atlas Efforts

The *Wisconsin Herpetological Atlas Project* tracks the distributions of reptiles (and amphibians) in Wisconsin. The Milwaukee Public Museum, Inc. with the cooperative support of the DNR's Bureau of Endangered Resources and the Nature Conservancy initiated the Herpetological Atlas Project in 1986. The Herpetological Atlas is producing a computerized database of reptile distribution, based on records obtained from museum collections, field surveys, literature, and field notes provided by volunteer observers throughout the state. Over 800 endangered and threatened species records have been received, and over 450 new county records have been confirmed since the project began. The data collected help in mapping species distributions, documenting rare species occurrences, analyzing population trends, examining habitat requirements, and planning conservation priorities. Preliminary results of the Herpetological



Atlas Project are presented in Casper (1996, 1998). For more information on the Herpetological Atlas Project, readers are encouraged to visit the project's web site (<http://www.mpm.edu/>).

Class Reptilia: Reptiles

Order Testudines: Turtles

- Family Kinosternidae: Mud and Musk Turtles
 - Sternotherus odoratus* Stinkpot
- Family Chelydridae: Snapping Turtles
 - Chelydra serpentina serpentina* Eastern Snapping Turtle
- Family Emydidae: Semi-aquatic Pond and Marsh Turtles
 - Chrysemys picta* Painted Turtle
 - ST** *Clemmys insculpta* Wood Turtle
 - ST** *Emydoidea blandingii* Blanding's Turtle
 - Graptemys geographica* Northern Map Turtle
 - Graptemys ouachitensis*⁸ Ouachita Map Turtle
 - Graptemys pseudogeographica*⁸ False Map Turtle
 - SE** *Terrapene ornata ornata* Ornate Box Turtle
- Family Trionychidae: Softshell Turtles
 - Apalone mutica* Smooth Softshell Turtle
 - Apalone spinifera* Spiny Softshell Turtle

Order Squamata: Lizards and Snakes

Suborder Sauria: Lizards

- Family Teiidae: Whiptails and Racerunners
 - Cnemidophorus sexlineatus* Six-lined Racerunner
- Family Scincidae: Skinks
 - Eumeces fasciatus* Common Five-lined Skink
 - Eumeces septentrionalis septentrionalis* Northern Prairie Skink
- Family Anguidae: Glass Lizards
 - SE** *Ophisaurus attenuatus attenuatus* . . Western Slender Glass Lizard

Suborder Serpentes: Snakes

- Family Colubridae: Colubrids
 - Carphophis vermis* Western Wormsnake
 - Coluber constrictor*⁹ Eastern Racer
 - Diadophis punctatus* Ring-necked Snake
 - Elaphe obsoleta obsoleta* Black Ratsnake

⁸ The two species of *Graptemys*, *ouachitensis* and *pseudogeographica*, were previously considered subspecies of *G. pseudogeographica*, but are given full species status by Vogt (1980, 1993). While some authorities (e.g., Ernst and Barbour 1989, Ernst, *et al.* 1994) agree that the two taxa merit species status, other herpetologists (e.g., Conant and Collins 1991) have not yet embraced this change. We think the evidence is compelling and treat *ouachitensis* and *pseudogeographica* as separate species.

⁹ Wisconsin populations of this species have typically been classified as the Blue Racer (*Coluber constrictor foxi*), but Oldfield and Moriarty's (1995) recent classification of Minnesota specimens as Eastern Yellow-bellied Racer (*C. c. flaviventris*) calls this designation into question (Casper 1996). Additional work with Wisconsin specimens is needed in order to assign the correct subspecies. The recently adopted regulations covering reptiles (NR 19.26, Wis. Admin. Code) refer to Racers (*C. constrictor*).





Family Colubridae: Colubrids (*continued*)

<i>Elaphe vulpina</i>	Western Foxsnake
<i>Heterodon platirhinos</i>	Eastern Hog-nosed Snake
<i>Lampropeltis triangulum triangulum</i> ..	Eastern Milksnake
<i>Nerodia sipedon</i>	Northern Watersnake
<i>Ophedrys vernalis</i>	Smooth Greensnake
<i>Pituophis catenifer</i> ¹⁰	Bullsnake
SE <i>Regina septemvittata</i>	Queen Snake
<i>Storeria dekayi</i>	DeKay's Brownsnake
<i>Storeria occipitomaculata occipitomaculata</i> ..	Northern Red-bellied Snake
ST <i>Thamnophis butleri</i>	Butler's Gartersnake
SE <i>Thamnophis proximus</i>	Western Ribbonsnake
<i>Thamnophis radix</i>	Plains Gartersnake
SE <i>Thamnophis sauritus septentrionalis</i> ..	Northern Ribbonsnake
<i>Thamnophis sirtalis</i>	Common Gartersnake

Family Viperidae: Pit Vipers

<i>Crotalus horridus</i>	Timber Rattlesnake
SE <i>Sistrurus catenatus catenatus</i>	Eastern Massasauga

¹⁰ The taxonomy of this species remains confusing. Collins (1990) uses the species name *catenifer*. While some authorities (e.g., Oldfield and Moriarty 1995) have chosen to follow this convention in an attempt to maintain consistency, others (e.g., Casper 1996, Conant and Collins 1991) have retained *melanoleucus*. The recently adopted regulations covering reptiles (NR 19.26, Wis. Admin. Code) refer to Bullsnares (*P. melanoleucus sayi*). Crother, *et al.* (2000) use *P. c. sayi*.



Primary Reptile References: Christophel, *et al.* 2000, Casper 1996, Conant and Collins 1991, Vogt 1981, Pentecost and Vogt 1976 (as well as references cited in Watermolen 1992 and Dlutkowski, *et al.* 1987).



BIRDS



For those lucky people who have discovered the world of birds around us, life is never dull. Everywhere outdoors — from just outside our windows to the farthest wilderness — hundreds of kinds of colorful, tuneful birds are leading fascinating lives.

— Kenn Kaufman, 1996,
Lives of North American Birds





BIRDS

Taxonomy in the bird checklist follows the seventh edition of the American Ornithologists' Union's *Check-list of North American Birds* (AOU 1998). The initial state checklist was prepared from *Wisconsin Birdlife* (Robbins 1991). Gerald Bartelt and Amber Roth (DNR Bureau of Integrated Science Services) provided us with updated occurrence and status information. We also consulted the "official state checklist" of the Wisconsin Society for Ornithology (WSO), as published on the organization's web site (<http://www.uwgb.edu/birds/wso/>), and the reports of Tessen (1989), Robbins, *et al.* (1996) and Temple, *et al.* (1997), as well as records published in the *Passenger Pigeon* through 1999 (vol. 61). Common names follow the AOU (1998) checklist, except in a few cases where we deviate from that checklist and provide what we feel are more descriptive names for orders or families.

Four hundred eight bird species in 56 families are included in the Wisconsin checklist. Four hundred are native to the state and 8 are introduced non-native species. Piping Plover (*Charadrius melodus*), Whooping Crane (*Grus americana*), and Kirtland's Warbler (*Dendroica kirtlandii*) are listed as endangered species at the federal level. Thirteen bird species are listed as endangered at the state level and 13 others are considered threatened at the state level.

In addition to the standard conservation status codes used in the other checklists in this report (see page 2), we indicate the relative occurrence of all listed bird species. There are a variety of ways in which such information can be categorized, each with its own inherent strengths and weaknesses. Recognizing that not everyone will be pleased with our approach or agree with all of our designations, we indicate the relative occurrence of species using the following codes:

- (A) accidental** – a species whose presence in the state is documented by generally fewer than 3 records and/or that remains questionable as a component of the Wisconsin fauna.
- (R) rare** – a species reported from Wisconsin eight or fewer times annually.
- (C) casual** – a species reported from Wisconsin only once every 3-5 years.
- (M) migrant** – a species that does not breed in Wisconsin, but which is seen during spring/autumn migration periods or during the winter.

Unless designated otherwise (i.e. as **(A)** or **(M)**), species can be considered breeding birds of the state. Bird species designated as rare **(R)** are generally migratory species, but there are a handful of rare breeding birds as well. In addition, Robbins, *et al.* (1996) list 233 breeding species from the state based on evidence of breeding between 1966 and 1991.



Excluded Bird Species

We exclude 15 species, considered species of hypothetical status, from the checklist. Robbins (1991) also considers most of these species to be hypothetical.

Table 2. Bird species of hypothetical status excluded from the checklist.

<i>Aechmophorus clarkii</i>	Clark's Grebe
<i>Eudocimus albus</i>	White Ibis
<i>Falco mexicanus</i>	Prairie Falcon
<i>Laterallus jamaicensis</i>	Black Rail
<i>Tringa erythropus</i>	Spotted Redshank
<i>Sterna dougallii</i>	Roseate Tern
<i>Brachyramphus perdix</i>	Long-billed Murrelet
<i>Zenaida asiatica</i>	White-winged Dove
<i>Archilochus colubris</i>	Black-chinned Hummingbird
<i>Pyrocephalus rubinus</i>	Vermillion Flycatcher
<i>Tyrannus vociferans</i>	Cassin's Kingbird
<i>Oenanthe oenanthe</i>	Northern Wheatear
<i>Anthus spragueii</i>	Sprague's Pipit
<i>Myioborus pictus</i>	Painted Redstart
<i>Carduelis psaltria</i>	Lesser Goldfinch

Some biologists consider Roseate Spoonbill (*Ajaia ajaja*), Masked Duck (*Nomonyx dominicus*), Willow Ptarmigan (*Lagopus lagopus*), Eskimo Curlew (*Numenius borealis*), White-winged Tern (*Chlidonias leucopterus*), and Say's Phoebe (*Sayornia saya*) to be extirpated from Wisconsin. We include these species in the checklist as "accidental," because we feel the available records more closely fit this category. It should be recognized, however, that all records of these species occurring in the state are from the 1800s.



Extinct Bird Species

We exclude Carolina Parakeet (*Conuropsis carolinensis*) and Passenger Pigeon (*Ectopistes migratorius*) from the checklist because both species are now extinct.

The Wisconsin Ornithological Literature

The literature dealing with the life history, ecology, distribution, status, phenology, and biology of Wisconsin birds is extensive. Papers and notes have been published in a wide variety of ornithology, ecology, zoology and wildlife management outlets, as well as numerous government agency reports. The Wisconsin Society for Ornithology publishes a quarterly journal, *The Passenger Pigeon*, focusing exclusively on Wisconsin birds. Much of the Wisconsin ornithological literature is cataloged in Robbins' (1991) *Wisconsin Birdlife*. However, no comprehensive bibliography of more recent works dealing with Wisconsin birds has been compiled.





Bird Survey and Atlas Efforts

The *Wisconsin Breeding Bird Atlas* (WBBA) is an on-going project administered by the Wisconsin Society for Ornithology (WSO). The WBBA began in the spring of 1995. The WBBA provides a permanent record of the bird species breeding in the state, increases our knowledge of the distribution, nesting phenology, habitat preferences, and abundance of Wisconsin breeding birds, and provides baseline data for monitoring future changes in bird populations. WBBA data also can be used to provide comparisons with historical studies, complement existing or on-going avian monitoring programs in Wisconsin and in nearby states, and assist international efforts to preserve Neotropical migratory birds. Information about the WBBA and the results of atlas efforts can be viewed at the project's web site (<http://www.uwgb.edu/birds/wbba/>).

The *Wisconsin Checklist Project* began in 1982 under the direction of Dr. Stanley Temple, with sponsorship from the WSO, and has been administered by the DNR since 1989. The project relies on simple checklist information provided by volunteer bird watchers. Participants submit weekly checklists of the birds they encountered in their respective regions of the state. From these records, reporting frequencies are calculated – i.e. the percentage of the weekly checklists on which the species has been reported during a particular period of time and in a particular region of the state (Temple, *et al.* 1997). These reporting frequencies form the basis for seasonal, geographical, and historical analyses of the distribution and abundances of bird populations in Wisconsin. Data from the first five years of the project are summarized in Temple and Cary (1987) and for the first 14 years in Temple, *et al.* (1997).

Staff members in the DNR's Bureaus of Endangered Resources, Integrated Science Services, and Wildlife Management conduct a number of recurrent *Wildlife Surveys*. These surveys generally include population status information, harvest summaries, population analyses, and hunter surveys, as well as analysis of wildlife damage claims and nuisance complaints. Semi-annual *Wildlife Survey Reports* are prepared for each survey effort and are distributed to managers, researchers, administrators, and other DNR employees. *Wildlife Survey Reports* are intended to provide current survey information for management decisions. Thus, these reports provide current data and enough interpretation to understand the results (i.e. they are not intended to be definitive analyses of all survey data that has been collected). The surveys and the resulting reports allow the DNR to use the most current information to manage birds, including establishing harvest limits and seasons that are scientifically defensible. Through these surveys, the DNR has obtained a considerable amount of information on waterfowl, upland game birds, and a variety of endangered and threatened species. The DNR has also conducted breeding bird surveys on state natural areas, and now includes bird survey work as part of the master planning process for its larger properties.

In addition to these statewide efforts, there are several broader efforts that gather data on Wisconsin birds. The *North American Breeding Bird Survey* (BBS) is a large-scale roadside survey, primarily covering the

continental United States and southern Canada, although survey routes have recently been initiated in Alaska and northern Mexico. The BBS was started in 1966, and the over 3,500 routes are surveyed by experienced birders each June. The primary objective of the BBS has been the estimation of population change for songbirds. However, the data have many potential uses, and investigators have used the data to address a variety of research and management objectives. Results are summarized on the BBS web site, where they are supplemented with pictures of birds and other species information (<http://www.mbr-pwrc.usgs.gov/bbs/bbs.html>).

The National Audubon Society’s *Christmas Bird Count* (CBC) is an early-winter survey of birds. Initiated in 1900, the CBC occurs throughout North America. The sample area for a count is a circle 15 miles in diameter. Varying numbers of volunteers count all birds they see within the circle during a single day, within approximately 2 weeks of 25 December. The CBC is available by order from the National Audubon Society or from the BirdSource web site (see below) For additional information on the CBC, refer to the CBC web site (<http://www.mbr-pwrc.usgs.gov/bbs/cbc.html>).






BirdSource is an interactive on-line information system designed and managed by the National Audubon Society and the Cornell Laboratory of Ornithology. Citizen participants record and share bird counts. Their data help define bird ranges, populations, migration pathways, and habitat needs. BirdSource uses contributed data to track and display the density and movement of birds similar to how meteorologists track the weather. More information can be found on the BirdSource web site (<http://www.birdsource.org/>).

Class Aves: Birds

Order Gaviiformes: Loons

- Family Gaviidae: Loons
 - Gavia immer* Common Loon
 -   *Gavia pacifica* Pacific Loon
 -  *Gavia stellata* Red-throated Loon

Order Podicipediformes: Grebes

- Family Podicipedidae: Grebes
 -   *Aechmophorus occidentalis* Western Grebe
 - Podiceps auritus* Horned Grebe
 -  *Podiceps grisegena* Red-necked Grebe
 -   *Podiceps nigricollis* Eared Grebe
 - Podilymbus podiceps* Pied-billed Grebe

Order Pelecaniformes: Pelicans, Cormorants, and Allies

- Family Pelecanidae: Pelicans
 - Pelecanus erythrorhynchos* American White Pelican
 -  *Pelecanus occidentalis* Brown Pelican
- Family Phalacrocoracidae: Cormorants
 - Phalacrocorax auritus* Double-crested Cormorant





Family Anhingidae: Darters

- A** *Anhinga anhinga* Anhinga

Family Fregatidae: Frigatebirds

- A** *Fregata magnificens* Magnificent Frigatebird

Order Ciconiiformes: Herons, Ibises, Storks, and Vultures

Family Ardeidae: Herons, Bitterns, and Allies

- ST** *Ardea alba*¹¹ Great Egret
Ardea herodias Great Blue Heron
Botaurus lentiginosus American Bittern
Bubulcus ibis Cattle Egret
Butorides virescens Green Heron
M R *Egretta caerulea* Little Blue Heron
SE *Egretta thula* Snowy Egret
M C *Egretta tricolor* Tricolored Heron
Ixobrychus exilis Least Bittern
ST *Nyctanassa violacea* Yellow-crowned Night-Heron
Nycticorax nycticorax Black-crowned Night-Heron

Family Threskiornithidae: Ibises and Spoonbills

- A** *Ajaia ajaja* Roseate Spoonbill
A *Plegadis chihi* White-faced Ibis
M C *Plegadis falcinellus* Glossy Ibis

Family Ciconiidae: Storks

- A** *Mycteria americana* Wood Stork

Family Cathartidae: New World Vultures

- Cathartes aura* Turkey Vulture
A *Coragyps atratus* Black Vulture

Order Anseriformes: Waterfowl

Family Anatidae: Ducks, Geese, and Swans

- Aix sponsa* Wood Duck
Anas acuta Northern Pintail
Anas americana American Wigeon
A *Anas bahamensis* White-cheeked Pintail
Anas clypeata Northern Shoveler
Anas crecca Green-winged Teal
M C *Anas cyanoptera* Cinnamon Teal
Anas discors Blue-winged Teal
M C *Anas penelope* Eurasian Wigeon
Anas platyrhynchos Mallard
Anas rubripes American Black Duck
Anas strepera Gadwall
M *Anser albifrons* Greater White-fronted Goose
Aythya affinis Lesser Scaup
Aythya americana Redhead
Aythya collaris Ring-necked Duck
M *Aythya marila* Greater Scaup
Aythya valisineria Canvasback
M C *Branta bernicla* Brant
Branta canadensis Canada Goose



¹¹ Listed in NR 27.03(2), Wis. Admin. Code, as *Casmerodius albus*.

	<i>Bucephala albeola</i>	Bufflehead
	<i>Bucephala clangula</i>	Common Goldeneye
M C	<i>Bucephala islandica</i>	Barrow's Goldeneye
M	<i>Chen caerulescens</i>	Snow Goose
M R	<i>Chen rossii</i>	Ross's Goose
M	<i>Clangula hyemalis</i>	Oldsquaw
SE	<i>Cygnus buccinator</i>	Trumpeter Swan
M	<i>Cygnus columbianus</i>	Tundra Swan
INT	<i>Cygnus olor</i>	Mute Swan
A	<i>Dendrocygna autumnalis</i>	Black-bellied Whistling-Duck
A	<i>Dendrocygna bicolor</i>	Fulvous Whistling-Duck
M R	<i>Histrionicus histrionicus</i>	Harlequin Duck
	<i>Lophodytes cucullatus</i>	Hooded Merganser
M	<i>Melanitta fusca</i>	White-winged Scoter
M	<i>Melanitta nigra</i>	Black Scoter
M	<i>Melanitta perspicillata</i>	Surf Scoter
	<i>Mergus merganser</i>	Common Merganser
	<i>Mergus serrator</i>	Red-breasted Merganser
A	<i>Nomonyx dominicus</i>	Masked Duck
	<i>Oxyura jamaicensis</i>	Ruddy Duck
M C	<i>Somateria mollissima</i>	Common Eider
M C	<i>Somateria spectabilis</i>	King Eider

Order Falconiformes: Diurnal Birds of Prey

Family Accipitridae: Hawks, Eagles, and Allies

	<i>Accipiter cooperii</i>	Cooper's Hawk
	<i>Accipiter gentilis</i>	Northern Goshawk
	<i>Accipiter striatus</i>	Sharp-shinned Hawk
M R	<i>Aquila chrysaetos</i>	Golden Eagle
	<i>Buteo jamaicensis</i>	Red-tailed Hawk
M	<i>Buteo lagopus</i>	Rough-legged Hawk
ST	<i>Buteo lineatus</i>	Red-shouldered Hawk
	<i>Buteo platypterus</i>	Broad-winged Hawk
M C	<i>Buteo regalis</i>	Ferruginous Hawk
M R	<i>Buteo swainsoni</i>	Swainson's Hawk
	<i>Circus cyaneus</i>	Northern Harrier
A	<i>Elanoides forficatus</i>	Swallow-tailed Kite
A	<i>Elanus leucurus</i>	White-tailed Kite
	<i>Haliaeetus leucocephalus</i>	Bald Eagle
M C	<i>Ictinia mississippiensis</i>	Mississippi Kite
ST	<i>Pandion haliaetus</i>	Osprey
A	<i>Parabuteo unicinctus</i>	Harris's Hawk

Family Falconidae: Falcons

	<i>Falco columbarius</i>	Merlin
SE	<i>Falco peregrinus</i>	Peregrine Falcon
M R	<i>Falco rusticolus</i>	Gyr Falcon
	<i>Falco sparverius</i>	American Kestrel

Order Galliformes: Gallinaceous Birds

Family Phasianidae: Partridges, Grouse, Turkeys, and Quail

	<i>Bonasa umbellus</i>	Ruffed Grouse
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Family Phasianidae: Partridges, Grouse, Turkeys, and Quail (*continued*)

- ST *Falcipennis canadensis*¹² Spruce Grouse
- A *Lagopus lagopus* Willow Ptarmigan
- Meleagris gallopavo* Wild Turkey
- INT *Perdix perdix* Gray Partridge
- INT *Phasianus colchicus* Ring-necked Pheasant
- ST *Tympanuchus cupido* Greater Prairie-Chicken
- Tympanuchus phasianellus* Sharp-tailed Grouse

Family Odontophoridae: New World Quail

- Colinus virginianus* Northern Bobwhite

Order Gruiformes: Rails, Cranes, and Allies

Family Rallidae: Rails, Gallinules, and Coots

- ST *Coturnicops noveboracensis* Yellow Rail
- Fulica americana* American Coot
- Gallinula chloropus* Common Moorhen
- M C *Porphyryla martinica* Purple Gallinule
- Porzana carolina* Sora
- R *Rallus elegans* King Rail
- Rallus limicola* Virginia Rail

Family Gruidae: Cranes

- A FE *Grus americana* Whooping Crane
- Grus canadensis* Sandhill Crane

Order Charadriiformes: Shorebirds, Gulls, Terns, and Allies

Family Charadriidae: Plovers

- A *Charadrius alexandrinus* Snowy Plover
- SE FE *Charadrius melodus* Piping Plover
- M *Charadrius semipalmatus* Semipalmated Plover
- Charadrius vociferus* Killdeer
- M *Pluvialis dominica* American Golden-Plover
- M *Pluvialis squatarola* Black-bellied Plover

Family Recurvirostridae: Stilts and Avocets

- R *Himantopus mexicanus* Black-necked Stilt
- R *Recurvirostra americana* American Avocet

Family Scolopacidae: Sandpipers, Phalaropes, and Allies

- Actitis macularia* Spotted Sandpiper
- M *Arenaria interpres* Ruddy Turnstone
- A *Arenaria melanocephala* Black Turnstone
- Bartramia longicauda* Upland Sandpiper
- M *Calidris alba* Sanderling
- M *Calidris alpina* Dunlin
- M *Calidris bairdii* Baird's Sandpiper
- M *Calidris canutus* Red Knot
- M C *Calidris ferruginea* Curlew Sandpiper
- M *Calidris fuscicollis* White-rumped Sandpiper
- M *Calidris himantopus* Stilt Sandpiper
- M R *Calidris maritima* Purple Sandpiper
- M C *Calidris mauri* Western Sandpiper
- M *Calidris melanotos* Pectoral Sandpiper

¹² Listed in NR 27.03(2), Wis. Admin. Code, as *Dendragapus canadensis*.

M	<i>Calidris minutilla</i>	Least Sandpiper
M	<i>Calidris pusilla</i>	Semipalmated Sandpiper
M	<i>Catoptrophorus semipalmatus</i>	Willet
	<i>Gallinago gallinago</i>	Common Snipe
M	<i>Limnodromus griseus</i>	Short-billed Dowitcher
M	<i>Limnodromus scolopaceus</i>	Long-billed Dowitcher
M	<i>Limosa fedoa</i>	Marbled Godwit
M	<i>Limosa haemastica</i>	Hudsonian Godwit
M C	<i>Numenius americanus</i>	Long-billed Curlew
A	<i>Numenius borealis</i>	Eskimo Curlew
M R	<i>Numenius phaeopus</i>	Whimbrel
M C	<i>Phalaropus fulicaria</i>	Red Phalarope
M	<i>Phalaropus lobatus</i>	Red-necked Phalarope
	<i>Phalaropus tricolor</i>	Wilson's Phalarope
M R	<i>Philomachus pugnax</i>	Ruff
	<i>Scolopax minor</i>	American Woodcock
M	<i>Tringa flavipes</i>	Lesser Yellowlegs
M	<i>Tringa melanoleuca</i>	Greater Yellowlegs
M	<i>Tringa solitaria</i>	Solitary Sandpiper
M R	<i>Tryngites subruficollis</i>	Buff-breasted Sandpiper
Family Laridae: Gulls, Terns, and Allies		
A	<i>Chlidonias leucopterus</i>	White-winged Tern
	<i>Chlidonias niger</i>	Black Tern
	<i>Larus argentatus</i>	Herring Gull
M R	<i>Larus atricilla</i>	Laughing Gull
M C	<i>Larus californicus</i>	California Gull
M C	<i>Larus canus</i>	Mew Gull
	<i>Larus delawarensis</i>	Ring-billed Gull
M R	<i>Larus fuscus</i>	Lesser Black-backed Gull
A	<i>Larus glaucescens</i>	Glaucous-winged Gull
M R	<i>Larus glaucoides</i>	Iceland Gull
M	<i>Larus hyperboreus</i>	Glaucous Gull
R	<i>Larus marinus</i>	Great Black-backed Gull
R	<i>Larus minutus</i>	Little Gull
	<i>Larus philadelphia</i>	Bonaparte's Gull
M	<i>Larus pipixcan</i>	Franklin's Gull
M C	<i>Larus ridibundus</i>	Black-headed Gull
M R	<i>Larus thayeri</i>	Thayer's Gull
A	<i>Pagophila eburnea</i>	Ivory Gull
M C	<i>Rissa tridactyla</i>	Black-legged Kittiwake
M C	<i>Stercorarius longicaudus</i>	Long-tailed Jaeger
M R	<i>Stercorarius parasiticus</i>	Parasitic Jaeger
M C	<i>Stercorarius pomarinus</i>	Pomarine Jaeger
C	<i>Sterna antillarum</i>	Least Tern
SE	<i>Sterna caspia</i>	Caspian Tern
SE	<i>Sterna forsteri</i>	Forster's Tern
A	<i>Sterna fuscata</i>	Sooty Tern
SE	<i>Sterna hirundo</i>	Common Tern
A	<i>Sterna maxima</i>	Royal Tern
M C	<i>Sterna paradisaea</i>	Arctic Tern
M C	<i>Xema sabini</i>	Sabine's Gull





Family Alcidae: Auks and Allies

- (A) *Alle alle* Dovekie
- (A) *Synthliboramphus antiquus* Ancient Murrelet

Order Columbiformes: Pigeons and Allies

Family Columbidae: Pigeons and Doves

- (INT) *Columba livia* Rock Dove
- (A) *Columbina passerina* Common Ground-Dove
- (A) (INT) *Streptopelia decaocto* Eurasian Collared-Dove
- Zenaida macroura* Mourning Dove

Mourning Dove
Wisconsin State Symbol of Peace



Order Cuculiformes: Cuckoos and Allies

Family Cuculidae: Cuckoos and Allies

- Coccyzus americanus* Yellow-billed Cuckoo
- Coccyzus erythrophthalmus* Black-billed Cuckoo
- (A) *Crotophaga sulcirostris* Groove-billed Ani

Order Strigiformes: Owls

Family Tytonidae: Barn Owls

- (C) (SE) *Tyto alba* Barn Owl

Family Strigidae: Typical Owls

- Aegolius acadicus* Northern Saw-whet Owl
- (M) (C) *Aegolius funereus* Boreal Owl
- Asio flammeus* Short-eared Owl
- Asio otus* Long-eared Owl
- (M) (C) *Athene cunicularia* Burrowing Owl
- Bubo virginianus* Great Horned Owl
- (M) *Nyctea scandiaca* Snowy Owl
- Otus asio* Eastern Screech-Owl
- (R) *Strix nebulosa* Great Gray Owl
- Strix varia* Barred Owl
- (M) (C) *Surnia ulula* Northern Hawk Owl

Order Caprimulgiformes: Goatsuckers and Allies

Family Caprimulgidae: Goatsuckers

- (C) *Caprimulgus carolinensis* Chuck-will's-widow
- Caprimulgus vociferus* Whip-poor-will
- Chordeiles minor* Common Nighthawk

Order Apodiformes: Swifts and Hummingbirds

Family Apodidae: Swifts

- Chaetura pelagica* Chimney Swift

Family Trochilidae: Hummingbirds

- Archilochus colubris* Ruby-throated Hummingbird
- (A) *Calypte anna* Anna's Hummingbird
- (A) *Colibri thalassinus* Green Violet-ear
- (M) (C) *Selasphorus rufus* Rufous Hummingbird

Order Coraciiformes: Rollers, Kingfishers, and Allies

Family Alcedinidae: Kingfishers

- Ceryle alcyon* Belted Kingfisher



Order Piciformes: Woodpeckers and Allies

Family Picidae: Woodpeckers and Allies

<i>Colaptes auratus</i>	Northern Flicker
<i>Dryocopus pileatus</i>	Pileated Woodpecker
<i>Melanerpes carolinus</i>	Red-bellied Woodpecker
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker
A <i>Melanerpes lewis</i>	Lewis's Woodpecker
R <i>Picoides arcticus</i>	Black-backed Woodpecker
<i>Picoides pubescens</i>	Downy Woodpecker
M C <i>Picoides tridactylus</i>	Three-toed Woodpecker
<i>Picoides villosus</i>	Hairy Woodpecker
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker

Order Passeriformes: Perching Birds

Family Tyrannidae: Tyrant Flycatchers

<i>Contopus cooperi</i>	Olive-sided Flycatcher
A <i>Contopus sordidulus</i>	Western Wood-Pewee
<i>Contopus virens</i>	Eastern Wood-Pewee
<i>Empidonax alnorum</i>	Alder Flycatcher
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher
<i>Empidonax minimus</i>	Least Flycatcher
A <i>Empidonax oberholseri</i>	Dusky Flycatcher
<i>Empidonax traillii</i>	Willow Flycatcher
ST <i>Empidonax virens</i>	Acadian Flycatcher
<i>Myiarchus crinitus</i>	Great Crested Flycatcher
<i>Sayornis phoebe</i>	Eastern Phoebe
A <i>Sayornis saya</i>	Say's Phoebe
M C <i>Tyrannus forficatus</i>	Scissor-tailed Flycatcher
A <i>Tyrannus savana</i>	Fork-tailed Flycatcher
<i>Tyrannus tyrannus</i>	Eastern Kingbird
R <i>Tyrannus verticalis</i>	Western Kingbird

Family Laniidae: Shrikes

M <i>Lanius excubitor</i>	Northern Shrike
SE <i>Lanius ludovicianus</i>	Loggerhead Shrike

Family Vireonidae: Vireos

ST <i>Vireo bellii</i>	Bell's Vireo
<i>Vireo flavifrons</i>	Yellow-throated Vireo
<i>Vireo gilvus</i>	Warbling Vireo
R <i>Vireo griseus</i>	White-eyed Vireo
<i>Vireo olivaceus</i>	Red-eyed Vireo
M <i>Vireo philadelphicus</i>	Philadelphia Vireo
<i>Vireo solitarius</i>	Blue-headed Vireo
A <i>Vireo vicinior</i>	Gray Vireo

Family Corvidae: Jays and Crows

<i>Corvus brachyrhynchos</i>	American Crow
<i>Corvus corax</i>	Common Raven
<i>Cyanocitta cristata</i>	Blue Jay
A <i>Nucifraga columbiana</i>	Clark's Nutcracker
<i>Perisoreus canadensis</i>	Gray Jay
A <i>Pica pica</i>	Black-billed Magpie





Family Alaudidae: Larks

Eremophila alpestris Horned Lark

Family Hirundinidae: Swallows

Hirundo rustica Barn Swallow

Petrochelidon pyrrhonota Cliff Swallow

Progne subis Purple Martin

Riparia riparia Bank Swallow

Stelgidopteryx serripennis Northern Rough-winged Swallow

Tachycineta bicolor Tree Swallow

Family Paridae: Chickadees and Titmice

Baeolophus bicolor Tufted Titmouse

Poecile atricapillus Black-capped Chickadee

Poecile hudsonicus Boreal Chickadee

Family Sittidae: Nuthatches

Sitta canadensis Red-breasted Nuthatch

Sitta carolinensis White-breasted Nuthatch

A *Sitta pusilla* Brown-headed Nuthatch

Family Certhiidae: Creepers

Certhia americana Brown Creeper

Family Troglodytidae: Wrens

Cistothorus palustris Marsh Wren

Cistothorus platensis Sedge Wren

C SE *Thryomanes bewickii* Bewick's Wren

R *Thryothorus ludovicianus* Carolina Wren

Troglodytes aedon House Wren

Troglodytes troglodytes Winter Wren

Family Regulidae: Kinglets

Regulus calendula Ruby-crowned Kinglet

Regulus satrapa Golden-crowned Kinglet

Family Sylviidae: Old World Warblers and Gnatcatchers

Poliophtila caerulea Blue-gray Gnatcatcher

Family Turdidae: Thrushes

Catharus fuscescens Veery

Catharus guttatus Hermit Thrush

M *Catharus minimus* Gray-cheeked Thrush

Catharus ustulatus Swainson's Thrush

Hylocichla mustelina Wood Thrush

M R *Ixoreus naevius* Varied Thrush

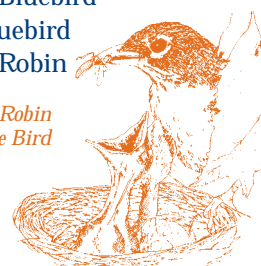
M R *Myadestes townsendi* Townsend's Solitaire

M C *Sialia currucoides* Mountain Bluebird

Sialia sialis Eastern Bluebird

Turdus migratorius American Robin

American Robin
Wisconsin State Bird



Family Mimidae: Mockingbirds and Thrashers

Dumetella carolinensis Gray Catbird

R *Mimus polyglottos* Northern Mockingbird

A *Oreoscoptes montanus* Sage Thrasher



A	<i>Toxostoma curvirostre</i>	Curve-billed Thrasher
	<i>Toxostoma rufum</i>	Brown Thrasher
Family Sturnidae: Starlings		
INT	<i>Sturnus vulgaris</i>	European Starling
Family Motacillidae: Pipits		
M	<i>Anthus rubescens</i>	American Pipit
Family Bombycillidae: Waxwings		
	<i>Bombycilla cedrorum</i>	Cedar Waxwing
M	<i>Bombycilla garrulus</i>	Bohemian Waxwing
Family Ptilonotidae: Silky-Flycatchers		
A	<i>Phainopepla nitens</i>	Phainopepla
Family Parulidae: Wood-Warblers		
	<i>Dendroica caerulescens</i>	Black-throated Blue Warbler
M	<i>Dendroica castanea</i>	Bay-breasted Warbler
ST	<i>Dendroica cerulea</i>	Cerulean Warbler
	<i>Dendroica coronata</i>	Yellow-rumped Warbler
R	<i>Dendroica discolor</i>	Prairie Warbler
SE	<i>Dendroica dominica</i>	Yellow-throated Warbler
	<i>Dendroica fusca</i>	Blackburnian Warbler
C FE	<i>Dendroica kirtlandii</i>	Kirtland's Warbler
	<i>Dendroica magnolia</i>	Magnolia Warbler
A	<i>Dendroica nigrescens</i>	Black-throated Gray Warbler
A	<i>Dendroica occidentalis</i>	Hermit Warbler
	<i>Dendroica palmarum</i>	Palm Warbler
	<i>Dendroica pensylvanica</i>	Chestnut-sided Warbler
	<i>Dendroica petechia</i>	Yellow Warbler
	<i>Dendroica pinus</i>	Pine Warbler
M	<i>Dendroica striata</i>	Blackpoll Warbler
	<i>Dendroica tigrina</i>	Cape May Warbler
A	<i>Dendroica townsendi</i>	Townsend's Warbler
	<i>Dendroica virens</i>	Black-throated Green Warbler
	<i>Geothlypis trichas</i>	Common Yellowthroat
SE	<i>Helmitheros vermivorus</i>	Worm-eating Warbler
R	<i>Icteria virens</i>	Yellow-breasted Chat
A	<i>Limnithlypis swainsonii</i>	Swainson's Warbler
	<i>Mniotilta varia</i>	Black-and-white Warbler
	<i>Oporornis agilis</i>	Connecticut Warbler
ST	<i>Oporornis formosus</i>	Kentucky Warbler
	<i>Oporornis philadelphia</i>	Mourning Warbler
	<i>Parula americana</i>	Northern Parula
	<i>Protonotaria citrea</i>	Prothonotary Warbler
	<i>Seiurus aurocapillus</i>	Ovenbird
	<i>Seiurus motacilla</i>	Louisiana Waterthrush
	<i>Seiurus noveboracensis</i>	Northern Waterthrush
	<i>Setophaga ruticilla</i>	American Redstart
M	<i>Vermivora celata</i>	Orange-crowned Warbler
	<i>Vermivora chrysoptera</i>	Golden-winged Warbler
	<i>Vermivora peregrina</i>	Tennessee Warbler
	<i>Vermivora pinus</i>	Blue-winged Warbler
	<i>Vermivora ruficapilla</i>	Nashville Warbler
	<i>Wilsonia canadensis</i>	Canada Warbler





Family Parulidae: Wood-Warblers (*continued*)

- ST** *Wilsonia citrina* Hooded Warbler
Wilsonia pusilla Wilson's Warbler

Family Thraupidae: Tanagers

- M** **C** *Piranga ludoviciana* Western Tanager
Piranga olivacea Scarlet Tanager
M **R** *Piranga rubra* Summer Tanager

Family Emberizidae: Emberizids

- M** **A** *Ammodramus bairdii* Baird's Sparrow
ST *Ammodramus henslowii* Henslow's Sparrow
Ammodramus leconteii Le Conte's Sparrow
R *Ammodramus nelsoni* Nelson's Sharp-tailed Sparrow
Ammodramus savannarum Grasshopper Sparrow
M **A** *Amphispiza bilineata* Black-throated Sparrow
M **C** *Calamospiza melanocorys* Lark Bunting
M *Calcarius lapponicus* Lapland Longspur
A *Calcarius ornatus* Chestnut-collared Longspur
A *Calcarius pictus* Smith's Longspur
Chondestes grammacus Lark Sparrow
Junco hyemalis Dark-eyed Junco
Melospiza georgiana Swamp Sparrow
Melospiza lincolnii Lincoln's Sparrow
Melospiza melodia Song Sparrow
Passerculus sandwichensis Savannah Sparrow
M *Passerella iliaca* Fox Sparrow
M **C** *Pipilo chlorurus* Green-tailed Towhee
Pipilo erythrophthalmus Eastern Towhee
M **C** *Pipilo maculatus* Spotted Towhee
M *Plectrophenax nivalis* Snow Bunting
Poocetes gramineus Vesper Sparrow
M *Spizella arborea* American Tree Sparrow
Spizella pallida Clay-colored Sparrow
Spizella passerina Chipping Sparrow
Spizella pusilla Field Sparrow
Zonotrichia albicollis White-throated Sparrow
M **A** *Zonotrichia atricapilla* Golden-crowned Sparrow
M *Zonotrichia leucophrys* White-crowned Sparrow
M *Zonotrichia querula* Harris's Sparrow

Family Cardinalidae: Cardinals and Allies

- Cardinalis cardinalis* Northern Cardinal
C *Guiraca caerulea* Blue Grosbeak
A *Passerina amoena* Lazuli Bunting
A *Passerina ciris* Painted Bunting
Passerina cyanea Indigo Bunting
Pheucticus ludovicianus Rose-breasted Grosbeak
M **C** *Pheucticus melanocephalus* Black-headed Grosbeak
Spiza americana Dickcissel

Family Icteridae: Blackbirds

- Agelaius phoeniceus* Red-winged Blackbird
Dolichonyx oryzivorus Bobolink
M *Euphagus carolinus* Rusty Blackbird

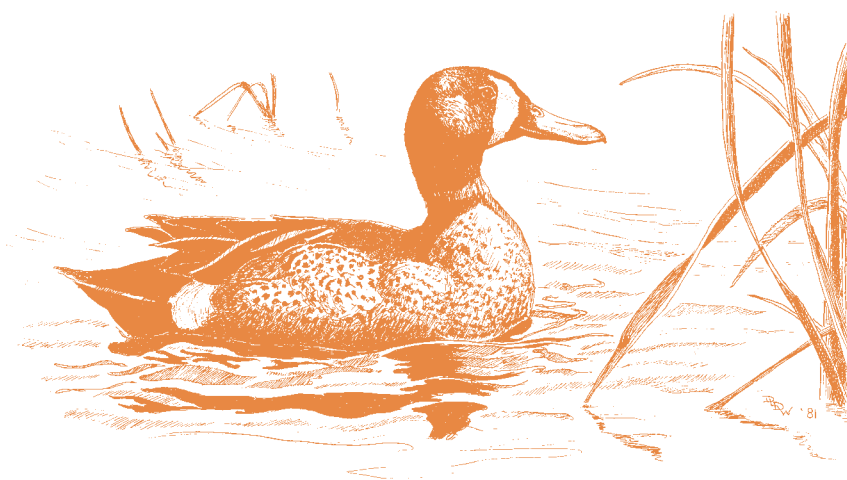
	<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
M R	<i>Icterus bullockii</i>	Bullock's Oriole
	<i>Icterus galbula</i>	Baltimore Oriole
A	<i>Icterus parisorum</i>	Scott's Oriole
A	<i>Icterus pustulatus</i>	Streak-backed Oriole
	<i>Icterus spurius</i>	Orchard Oriole
	<i>Molothrus ater</i>	Brown-headed Cowbird
	<i>Quiscalus quiscula</i>	Common Grackle
	<i>Sturnella magna</i>	Eastern Meadowlark
	<i>Sturnella neglecta</i>	Western Meadowlark
	<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird

Family Fringillidae: Finches and Allies

M	<i>Carduelis flammea</i>	Common Redpoll
M R	<i>Carduelis hornemanni</i>	Hoary Redpoll
	<i>Carduelis pinus</i>	Pine Siskin
	<i>Carduelis tristis</i>	American Goldfinch
INT	<i>Carpodacus mexicanus</i>	House Finch
	<i>Carpodacus purpureus</i>	Purple Finch
	<i>Coccothraustes vespertinus</i>	Evening Grosbeak
A	<i>Fringilla montifringilla</i>	Brambling
A	<i>Leucosticte tephrocotis</i>	Gray-crowned Rosy-Finch
	<i>Loxia curvirostra</i>	Red Crossbill
	<i>Loxia leucoptera</i>	White-winged Crossbill
	<i>Pinicola enucleator</i>	Pine Grosbeak

Family Passeridae: Old World Sparrows

INT	<i>Passer domesticus</i>	House Sparrow
M C INT	<i>Passer montanus</i>	Eurasian Tree Sparrow



Primary Bird References: Sauer, *et al.* 1999, Baicich and Harrison 1997, Temple, *et al.* 1997, Robbins, *et al.* 1996, Erdman and Jacobs 1991, Robbins 1991, Tessen 1989, Verch 1988, Temple and Cary 1987, Temple and Harris 1985, Hamerstrom 1983, Mossman and Lange 1982, Faanes 1981, Peterson 1980.





MAMMALS



It would be correct to say that mammals are a group of animals with backbones, whose bodies are insulated by hair, which nurse their infants with milk, and which share a unique jaw articulation. This, however, fails to convey how these few shared characteristics underpin the evolution of a group with astonishingly intricate adaptations, thrilling behavior, and highly complex societies.

— David Macdonald, 1984,
The Encyclopedia of Mammals





MAMMALS

Taxonomy in the mammal checklist follows that in the *Revised Checklist of North American Mammals North of Mexico, 1997* published by the Museum of Texas Tech University (Jones, *et al.* 1997), *The Smithsonian Book of North American Mammals* (Wilson and Ruff 1999), and *Mammals of North America: Temperate and Arctic Regions* (Forsyth 1999). Species are listed alphabetically under each family. Common names follow Jones, *et al.* (1997) and Wilson and Cole (2000). Where Jones, *et al.* (1997) provide more than one common name, we select the one in most frequent use in Wisconsin. We deviate from Jones, *et al.* (1997) and Wilson and Cole (2000) in providing what we feel are more descriptive or appropriate common names for some families and orders (e.g., Mephitidae).

The final revision of the mammal checklist contains 72 species in 19 families. Sixty-nine mammal species are native to the state and 3 are introduced non-native species. The Indiana Bat (*Myotis sodalis*) and Gray Wolf (*Canis lupus*) are currently listed as endangered species at the federal level. The Canada Lynx (*Lynx canadensis*) is listed as a threatened species at the federal level. The American Martin (*Martes americana*) is listed as endangered, and the Gray Wolf as threatened, at the state level. Four mammal species are considered extirpated.

Excluded Mammal Species

We exclude three mammal species from our checklist. Two specimens of what are believed to be Northern Bog Lemmings (*Synaptomys borealis*) were recently caught by a biologist working for the Bad River Tribe (R. Bautz, pers. comm.). These have yet to be evaluated by a qualified mammalogist. Until a species determination is made, we are compelled to leave this species off the list. We also exclude the Evening Bat (*Nycticeius humeralis*). Jones and Birney (1988) depict the range of this species as reaching extreme southern Wisconsin. This appears to be an artifact of their mapping technique, as no specimens of Evening Bat have been obtained in Wisconsin. Future survey work may show these two species to be a part of the Wisconsin fauna. In addition, there is a single record of a Black-tailed Prairie Dog (*Cynomys ludovicianus*) living for several years in a farm field near Ferryville in Crawford County (Craven 1995). This individual was probably accidentally transported to the state in a load of hay brought from the Dakotas. The Prairie Dog is native to the Great Plains and its natural range extends no further west than western Nebraska, South Dakota and North Dakota (Jones, *et al.* 1985). It is unlikely that this species will become established as part of the state's fauna.

The Wisconsin Mammal Literature

The literature on Wisconsin mammals is extensive. Papers and notes have been published in a wide variety of mammalogy, ecology, zoology, and wildlife management periodicals, as well as in numerous government reports. Most significant works dealing with life history, ecology,



distribution and status published prior to 1960 are included in the bibliography in Jackson’s (1961) *Mammals of Wisconsin*. No comprehensive bibliography of works dealing with Wisconsin mammals has been compiled since, although an attempt was made to catalog works dealing with Wisconsin Mustelidae and Mephitidae (Watermolen 1990).

Mammal Survey and Atlas Efforts


Staff members in the DNR’s Bureaus of Endangered Resources, Integrated Science Services, and Wildlife Management conduct a number of recurrent *Wildlife Surveys*. These surveys focus primarily on population status information, harvest summaries, population analyses, hunter/trapper surveys, and winter track counts, as well as analysis of wildlife damage claims and nuisance complaints. Semi-annual *Wildlife Survey Reports* are prepared for each survey effort and are distributed to managers, researchers, administrators, and other DNR employees. These reports provide current survey information for management decisions and allow the DNR to manage mammals using the most current information, including establishing harvest limits and seasons that are scientifically defensible. The DNR has obtained considerable information on furbearers, small game species, large game species, and a variety of non-game species through these surveys.

The DNR also tracks regularly *Rare Mammal Observations*. Observations of American Marten (*Martes americana*), Gray Wolf (*Canis lupus*), Canada Lynx (*Lynx canadensis*), Mountain Lion (*Puma concolor*), and Moose (*Alces alces*) come from DNR field personnel, personnel in other resource agencies, and members of the general public. Observations are reported on “Rare Mammal Observation Cards,” classified as “probable,” “possible,” or “not likely,” and tabulated and summarized on an annual basis (e.g., Wydeven and Megown 1996, Wydeven and Cervantes 1997, Wydeven and Boles 1998). The status of each of these species is briefly discussed below.

American Marten occurred in most forested areas of Wisconsin until the mid-1800s (Endangered Species Committee 1973), but unregulated trapping for the fur trade and habitat changes led to their extirpation in the 1920s (Kohn and Eckstein 1987). American Marten were first protected in 1921 and have been listed as a state endangered species since 1972. Martens were reintroduced into the Nicolet National Forest in northeastern Wisconsin between 1975 and 1982, and into the Chequamegon National Forest in northwestern Wisconsin between 1987 and 1990. Recent surveys suggest American Marten are doing well in the Nicolet National Forest and possibly expanding their range. American Marten do not, however, seem to be occurring abundantly in areas away from the reintroduction sites (Wydeven and Ashbrenner 1994, Wydeven and Megown 1996, Wydeven and Boles 1998).

The Gray Wolf is the only Wisconsin mammal listed as endangered by the federal government. It is listed as a threatened species by the state.





The Wisconsin population consists of about 250 wolves occurring in about 66 groups (Wydeven and Wiedenhoeft 2000a). Both the state and federal Gray Wolf recovery plan goals include establishing a sustainable population of 80 wolves in Wisconsin by the year 2000. In addition, the federal goals include establishing a viable population of 100 wolves outside of Minnesota and Isle Royale. In 1999, wolves were reclassified by the DNR from state endangered to threatened, and a state delisting goal of 250 was set for areas outside of Native American reservations (Wisconsin DNR 1999). If the populations of wolves remain stable or increase, federal reclassification to threatened or delisting could occur in the near future.

The Canada Lynx was previously listed as endangered by the state. It was down-listed to “special concern” in 1997, and placed on the list of protected animals (NR 10, Wis. Admin. Code). This species only occasionally occurs in Wisconsin in invasion years in the winter and there is no evidence of breeding. It is unclear if the Canada Lynx did once breed in the state and is now extirpated, or was always an occasional visitor (Thiel 1987). The DNR received three reports of Canada Lynx in 2001 (Wydeven and Wiedenhoeft 2002). The U.S. Fish and Wildlife Service listed the Canada Lynx as federally threatened in 2000, based on its range-wide status and potential threats.

The last known Mountain Lion in the state was killed in 1908 (Lewis and Craven 1987), although the species once included all of Wisconsin in its range. Mountain Lions are considered extirpated from the state, but a handful of sightings is reported annually. Fifty-eight sightings were reported between 1975 and 1987 (Lewis and Craven 1987), and many additional reports have been made since. The DNR received a total of 42 probable and possible observations of Mountain Lions in 2001 from 22 counties (Wydeven and Wiedenhoeft 2002). A large percentage of Mountain Lion reports are questionable. For example, only 6 of 39 Mountain Lion reports made in 1996 were classified as “probable,” and only 4 of 41 reports in 1997 were classified as “probable” (Wydeven and Cervantes 1997, Wydeven and Boles 1998). It is extremely unlikely that Mountain Lions will be found naturally reproducing in the state.

Moose once ranged throughout northern Wisconsin as far south as northern Green Lake and Sauk Counties, but were extirpated from the state in the early part of the twentieth century (Schorger 1957, Jackson 1961). In recent years, Moose have been reported in Florence, Marinette, and Oconto counties in the Northeast, Ashland, Iron, Oneida and Price counties in the northcentral part of the state, and Rusk County in western Wisconsin. These represent stray individuals from Michigan and Minnesota populations. The appearance of calves in 1995, 1996, and 1999 suggests that some limited reproduction may be occurring in the state (Wydeven and Megown 1996, Wydeven and Cervantes 1997, Wydeven and Wiedenhoeft 2000b).

Recent Reintroductions of Rare Mammals

In addition to the active reintroduction of American Marten and Fisher (*Martes pennanti*) and the natural recolonization of the Gray Wolf, efforts have been made to establish breeding populations of two other native mammals.

A herd of 41 Elk (*Cervus elaphus*) was introduced from Yellowstone National Park to an enclosure in the Trout Lake area in 1917 (Scott 1939), but many died from pneumonia and the population did not persist. In 1932, the remaining 15 elk in this pen were released into the wild, but most died due to poaching (Jackson 1961). Elk restockings from 1930-1950 were also unsuccessful (Endangered Species Committee 1973), primarily due to poaching. An experimental Elk herd was released into the Chequamegon National Forest in May 1995. A 4-year study conducted by the University of Wisconsin-Stevens Point will help determine the feasibility of reintroducing elk into northern Wisconsin. Readers interested in learning more about the elk reintroduction effort can find information on the Wisconsin Elk Reintroduction Study's web page (<http://www.uwsp.edu/wildlife/research/wers/elkpage.htm>).

American Bison (*Bos bison*) once roamed the prairies throughout southern and western Wisconsin, but by 1830 were rare (Endangered Species Committee 1973) and by 1833 were extirpated from Wisconsin (Schorger 1937, Jackson 1961). Small groups of American Bison are maintained in large enclosures at the Sandhill State Wildlife Area near Babcock in Wood County and at the McKenzie Environmental Center near Poynette in Columbia County. No other "wild" populations of American Bison occur in the state.

Class Mammalia: Mammals

Order Didelphimorphia: American Opossums

- Family Didelphidae: Opossums
Didelphis virginiana Virginia Opossum

Order Insectivora: Insectivores

- Family Soricidae: Shrews
Blarina brevicauda Northern Short-tailed Shrew
Cryptotis parva Least Shrew
Sorex arcticus Arctic Shrew
Sorex cinereus Masked Shrew
Sorex hoyi Pygmy Shrew
Sorex palustris Water Shrew

- Family Talpidae: Moles
Condylura cristata Star-nosed Mole
Scalopus aquaticus Eastern Mole

Order Chiroptera: Bats

- Family Vespertilionidae: Plain-nosed or Vesper Bats
Eptesicus fuscus Big Brown Bat
Lasionycteris noctivagans Silver-haired Bat
Lasiurus borealis Red Bat





Family Vespertilionidae: Plain-nosed or Vesper Bats (*continued*)

<i>Lasiurus cinereus</i>	Hoary Bat
<i>Myotis lucifugus</i>	Little Brown Bat
<i>Myotis septentrionalis</i>	Northern Myotis
FE <i>Myotis sodalis</i>	Indiana Bat ¹³
<i>Pipistrellus subflavus</i>	Eastern Pipistrelle

Order Carnivora: Carnivores

Family Canidae: Dogs

<i>Canis latrans</i>	Coyote
ST FE <i>Canis lupus</i>	Gray Wolf ¹⁴
<i>Urocyon cinereoargenteus</i>	Gray Fox
<i>Vulpes vulpes</i>	Red Fox

Family Ursidae: Bears

<i>Ursus americanus</i>	Black Bear
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Family Procyonidae: Procyonids

<i>Procyon lotor</i>	Common Raccoon
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Family Mustelidae: Weasels and Other Mustelids

EXT <i>Gulo gulo</i>	Wolverine
<i>Lontra canadensis</i> ¹⁵	Northern River Otter
SE <i>Martes americana</i>	American Marten
INT <i>Martes foina</i>	Beech Marten ¹⁶
<i>Martes pennanti</i>	Fisher
<i>Mustela erminea</i>	Ermine
<i>Mustela frenata</i>	Long-tailed Weasel
<i>Mustela nivalis</i>	Least Weasel
<i>Mustela vison</i>	American Mink
<i>Taxidea taxus</i>	American Badger

American Badger
Wisconsin State Animal



C. SCHWARTZ

Family Mephitidae: Skunks¹⁷

<i>Mephitis mephitis</i>	Striped Skunk
<i>Spilogale putorius</i>	Eastern Spotted Skunk ¹⁸

¹³ There is only a single record of the federally endangered Indiana Bat (*Myotis sodalis*) from Wisconsin (Jackson 1961). Its occurrence as a breeding species is doubtful, but some biologists have suggested that the lack of modern records may be due to a lack of bat survey work in the state rather than to the absence of the species.

¹⁴ This species is also commonly referred to as the Timber Wolf, especially in areas of the state where it has re-established populations.

¹⁵ The genus name *Lutra* is still used by some writers. We feel that Koepfli and Wayne (1998) clearly demonstrated that otters of the *Lutra* and *Lontra* groups do not share an exclusive common ancestor and therefore follow Jones, *et al.* (1997) in using *Lontra*.

¹⁶ An unknown number of the non-native Beech Marten (*Martes foina*; also referred to as the Stone Marten) were released from a fur farm and are now established in and around the southern unit of the Kettle Moraine State Forest (Jefferson, Racine, Waukesha, and Walworth counties) (R. Bautz, pers. comm.; Long 1995). The size of the population and whether or not it is reproducing is unknown. Documentation of the species is limited. A single specimen, a tanned skin, is available in the University of Wisconsin Zoology Museum (R. Bautz, pers. comm.), and a mounted specimen is displayed at the Kettle Moraine State Forest headquarters (Long 1995).



Family Felidae: Cats

EXT	<i>Puma concolor</i>	Mountain Lion
FT	<i>Lynx canadensis</i>	Canada Lynx
	<i>Lynx rufus</i>	Bobcat

Order Rodentia: Rodents

Family Squirridae: Squirrels

<i>Glaucomys sabrinus</i>	Northern Flying Squirrel
<i>Glaucomys volans</i>	Southern Flying Squirrel
<i>Marmota monax</i>	Woodchuck
<i>Sciurus carolinensis</i>	Eastern Gray Squirrel
<i>Sciurus niger</i>	Eastern Fox Squirrel
<i>Spermophilus franklinii</i>	Franklin's Ground Squirrel
<i>Spermophilus tridecemlineatus</i> . .	Thirteen-lined Ground Squirrel
<i>Tamias minimus</i>	Least Chipmunk
<i>Tamias striatus</i>	Eastern Chipmunk
<i>Tamiasciurus hudsonicus</i>	Red Squirrel

Family Geomyidae: Pocket Gophers

<i>Geomys bursarius</i>	Plains Pocket Gopher
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Family Castoridae: Beavers

<i>Castor canadensis</i>	American Beaver
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Family Muridae: Mice, Rats, and Voles¹⁹

<i>Clethrionomys gapperi</i>	Southern Red-backed Vole
<i>Microtus ochrogaster</i>	Prairie Vole
<i>Microtus pennsylvanicus</i>	Meadow Vole
<i>Microtus pinetorum</i>	Woodland Vole
INT <i>Mus musculus</i>	House Mouse
<i>Ondatra zibethicus</i>	Muskrat
<i>Peromyscus leucopus</i>	White-footed Mouse
<i>Peromyscus maniculatus</i>	Deer Mouse
INT <i>Rattus norvegicus</i>	Norway Rat
<i>Reithrodontomys megalotis</i>	Western Harvest Mouse
<i>Synaptomys cooperi</i>	Southern Bog Lemming

Family Zapodidae: Jumping Mice

<i>Napaeozapus insignis</i>	Woodland Jumping Mouse
<i>Zapus hudsonius</i>	Meadow Jumping Mouse

Family Erethizontidae: New World Porcupines

<i>Erethizon dorsatum</i>	Common Porcupine
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¹⁷ Skunks were previously included with weasels in the family Mustelidae, but recent phylogenetic work using analyses of mitochondrial-DNA sequence data and morphological data (Dragoo and Honeycutt 1997) resulted in skunks being grouped together in the new family Mephitidae.

¹⁸ There are only a few historical records of Spotted Skunks (*Spilogale putorius*) from Wisconsin. Its occurrence as a breeding species is doubtful, but some biologists suggest the lack of modern records may be due to a lack of recent field survey work rather than the absence of the species.

¹⁹ Older works divide these rodents into a New World family (Cricetidae) and an Old World family (Muridae). Morphological differences between the two groups are minor. Most mammalogists currently emphasize the similarities by grouping them together as we have.





Order Artiodactyla: Even-toed Ungulates

Family Cervidae: Deer

- Alces alces* Moose
- Cervus elaphus* Elk
- Odocoileus virginianus* White-tailed Deer

White-tailed Deer
Wisconsin State Wildlife Animal



-  *Rangifer tarandus* Caribou
- Family Bovidae: Cattle
-  *Bos bison*²⁰ American Bison

Order Lagomorpha: Hares and Rabbits

Family Leporidae: Hares and Rabbits

- Lepus americanus* Snowshoe Hare
- Lepus townsendii* White-tailed Jackrabbit
- Sylvilagus floridanus* Eastern Cottontail

²⁰ Placement of American Bison into the genus *Bos* has been somewhat controversial. Several authors (Groves 1981, Miyamoto, *et al.* 1989, Wall, *et al.* 1992) provide data to support the placement of *Bison* in synonymy with *Bos*, yet relatively few references have embraced this change (e.g., Nowak [1999] and Wilson and Ruff [1999] retain *Bison*). We feel that the evidence is so compelling that we follow Jones, *et al.* (1997) and Forsyth (1999) and use *Bos*.



Primary Mammal References: Wydeven, *et al.* 1999, Jones, *et al.* 1997, Kurta 1995, Long 1995, Lewis and Rongstad 1992, Long 1990, Jones and Birney 1988, Buehler and Keith 1982, Long 1976, Peterson, *et al.* 1976, Long 1974, Dumke 1973, Jackson 1961, Scott 1939 (as well as references cited in Watermolen 1990).





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APPENDIX A. Legal Designations

In addition to the conservation status designations (endangered, threatened, etc.) identified in the Introduction (page 2), Wisconsin law provides legal definitions for several groups of vertebrate animals. Terms such as “game animal,” “panfish,” “fur-bearer,” and “migratory game bird” often come up in resource management and outdoor recreation discussions. Some of these terms have specific legal meanings. Definitions for these terms, as they appear in the state statutes and administrative rules, are listed here for reference purposes. The statutes and administrative rules rarely include scientific names and often group species together under a single term (e.g., “fox” would include both red and gray foxes).

Definitions Applied to Fishes

Bait means any species of frog, crayfish or minnow used for fishing purposes. (§ 29.509(1), *Wis. Stats.*).

Farm-raised fish means a fish that is kept on a fish farm for propagation purposes or reared on a fish farm and that has not been introduced, stocked or planted into waters outside a fish farm or that has not escaped from a fish farm. (§ 29.001(25), *Wis. Stats.*).

Game fish includes all varieties of fish except rough fish and minnows. (§ 29.001(41), *Wis. Stats.*).

Minnow includes a sucker not listed as endangered or threatened under s. 29.604(3), central mudminnow, tadpole madtom, stonecat, banded killifish, blackstripe topminnow, brook silverside, brook stickleback, ninespine stickleback, trout-perch, darter, log perch, sculpin. “Minnow” includes any minnow family cyprinid that is not listed as endangered or threatened under s. 29.604(3) and that is not a goldfish, grass carp, common carp or rudd. “Minnow” does not include any sucker, darter, sculpin or minnow species that is designated detrimental under s. 29.424. (§ 29.001(54), *Wis. Stats.*).

Panfish means the following fish species: yellow perch, bluegill, black crappie, white crappie, pumpkinseed, green sunfish, warmouth and orangespotted sunfish. (§ NR 20.03(29), *Wis. Admin. Code.*).

Rough fish includes suckers, not listed as endangered or threatened under s. 29.604(3), common carp, goldfish, freshwater drum, burbot, bowfin, garfish, sea lamprey, alewife, gizzard shad, rainbow smelt and mooneye. (§ 29.001(74), *Wis. Stats.*).

Definitions Applied to Birds

Eyas means a young raptor not yet capable of flight. (§ NR 18.01(3), *Wis. Admin. Code.*).

Game birds includes wild geese, brant, wild ducks, wild swan, rails, coots, gallinules, snipe, woodcock, plovers, sandpipers, ruffed grouse, prairie chicken, sharp-tailed grouse, pheasants, Hungarian partridge, Chukar partridge, bobwhite, quail, crows and wild turkey. (§ 29.001(39), *Wis. Stats.*).

Migratory game birds means any bird which is migratory and on which an open season has been prescribed in this chapter [NR 10, *Wis. Admin. Code.*] and belonging to one of the following families: (a) Anatidae (wild ducks, geese and brant), (b) Rallidae (rails, coots and gallinules), (c) Scolopacidae (woodcock and Wilson’s snipe (jacksnipe)). (§ NR 10.001(15), *Wis. Admin. Code.*).





Raptor means a live, migratory bird of the order Falconiformes or the order Strigiformes, other than a bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*). (§ NR 18.01(10), Wis. Admin. Code).

Upland game birds are pheasants, quail, Hungarian (gray) partridge, grouse and wild turkey. (§ NR 1.14, Wis. Admin. Code).

Waterfowl means any migratory bird of the family Anatidae (wild ducks, geese, brant and swans). (§ NR 10.001(30), Wis. Admin. Code ; § NR 16.001(7), Wis. Admin. Code).

Definitions Applied to Mammals

Big game mammals in Wisconsin are white-tailed deer and black bear. (§ NR 1.15, Wis. Admin. Code).

Fur-bearing animals includes otter, beaver, mink, muskrat, marten, fisher, skunk, raccoon, fox, weasel, opossum, badger, wolf, coyote, bobcat, cougar and lynx. (§ 29.001(30), *Wis. Stats.*).

Fur-bearers are muskrat, mink, weasel, beaver, otter, skunk, raccoon, fox, coyote, bobcat and opossum. (§ NR 1.16, Wis. Admin. Code).

Game animals includes deer, moose, elk, bear, rabbits, squirrels, fox and raccoon. (§ 29.001(36), *Wis. Stats.*).

Small game mammals include rabbits, hares and squirrels. (§ NR 1.13, Wis. Admin. Code).

Definitions Applied to More than One Vertebrate Group

Game includes all varieties of wild mammals or birds. (§ 29.001(33), *Wis. Stats.*).

Nongame species means any species of wild animal not classified as a game fish, game animal, game bird or fur-bearing animal. (§ 29.001(60), *Wis. Stats.*).

Protected wild animals means those animals for which a closed season, bag limit, size limit or possession limit has been provided by statute or administrative rule, and includes: (a) Nongame species unless specifically designated as unprotected by the department [DNR]; (b) Game fish, game animals, game birds and fur-bearing animals during closed seasons; (c) endangered and threatened species listed in ch. NR 27. (§ NR 19.001(14), Wis. Admin. Code).

Unprotected wild animals means those animals for which no closed season, bag limit, size limit or possession limit has been established by statute or administrative rule. (§ NR 19.001(17), Wis. Admin. Code).

Wild animal means any mammal, bird, fish, or other creature of a wild nature endowed with sensation and the power of voluntary motion. (§ 29.001(90), *Wis. Stats.*; § NR 16.001(8), Wis. Admin. Code; § NR 19.001(19), Wis. Admin. Code).

Wildlife means birds and mammals, which have inhabited and were propagated in a natural environment. (§ NR 1.18(1)(c), Wis. Admin. Code).



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